

**THE  
RAILWAY GAZETTE**

A Journal of Management, Engineering and Operation  
INCORPORATING

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## ELECTRIC RAILWAY TRACTION

*A Supplement illustrating and describing developments in Electric Railway Traction is presented with every copy of this week's issue*

## DISPATCH OF "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. The RAILWAY GAZETTE possesses the necessary permit and machinery for such dispatch, and any reader desirous of arranging for copies to be delivered to an agent or correspondent overseas should place the order with us together with the necessary delivery instructions.

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas, as they are stopped under the provisions of Statutory Rules & Orders 1939, No. 1440

With the object of conserving paper by avoiding the return of unsold copies, readers are advised in the interests of all concerned to place a regular order for THE RAILWAY GAZETTE either with their newsagent or direct with the Publisher

## The Southern Railway Meeting

MR. ROBERT HOLLAND-MARTIN'S address to Southern Railway stockholders wound up a season of railway meetings more than usually interesting by reason of the changes in the control and operation of the companies occasioned by the war. On the Southern Railway one of the effects has been an almost complete cessation of normal Continental traffic, which had been seriously affected before the actual outbreak of hostilities. To a much less extent than formerly is the Southern in present circumstances dependent on passenger traffic which hitherto has accounted for 75 per cent. of total traffic; the division with goods traffic is now more nearly equal. As usual success has attended the electrification policy pursued by the company, the first two months' working of the Chatham and Gillingham extension resulted in an increase of 8 per cent. in receipts and in the whole electrified area there was an improvement of 2.3 per cent. The company has borne a heavy part of the war effort and its docks at Southampton have proved of great national value. The Southern share of the pool established under the Government scheme was £2,262,000 and this raised the increase in net revenue, which for the first eight months of 1939 was but £146,000, to £801,000 for the full year.

\* \* \* \*

## London Transport Assessment

The Railway Assessment Authority has now issued the draft of the first valuation roll of the "transport undertaking" of the London Passenger Transport Board. Procedure is governed by the Railways (Valuation for Rating) Act, 1930, as applied to the board by the London Passenger Transport (Valuation for Rating) Scheme and Order, 1935, made under the London Passenger Transport Act, 1933. Subject to the result of any representations to the authority and of any appeals to the courts, the draft roll will govern the liability of the board for local rates during the period April, 1936, to April, 1941, in respect of the properties occupied for the purposes of the transport undertaking, which includes railways, tramways, and trolleybuses, but not motorbuses nor road coaches. According to the draft roll, the total average net receipts of the board from its transport undertaking for the two accounting years ended June 30, 1935, amount to £3,377,000, and the total net annual value of the transport undertaking (estimated by reference to those receipts) is stated to be £1,765,000. This compares with similar existing rating assessments of about £1,026,000. In dividing the total of £1,765,000 between all the rating areas and parishes on the board's system, the authority has had the task of the referencing and valuation of over 400 stations, works, and depots, and of the estimation of passenger-miles for every section of railway, tramway, and trolleybus route.

\* \* \* \*

## Anglo-Spanish Trade Agreement

The Anglo-Spanish Trade Treaty was signed in Madrid on March 18, by Colonel Beigbeder, the Spanish Minister for Foreign Affairs, and Sir Maurice Peterson, the British Ambassador. This successful ending to the protracted negotiations conducted by the British Trade Mission to Spain may confidently be expected to open up a new era for Anglo-Spanish trade, so seriously interrupted by the civil war. According to the announcement made in the House of Commons by Sir Andrew Duncan, President of the Board of Trade, the United Kingdom will advance £2,000,000 to the Spanish Government under the loan agreement for the purchase of goods, and, in addition, a sum sufficient with the £2,000,000 of credits remaining over in the Bank of England from the 1936 clearing, to

pay off 50 per cent. of the pre-civil-war indebtedness. Interest is to be paid on the loan, but capital repayment will not begin until 1942, after which repayment will be made in ten equal annual instalments. The whole of the loan may be spent on goods, including raw materials of any sterling area origin. The payments agreement, which comes into force on April 1, provides for the re-establishment of a clearing, and all sums due in respect of Spanish goods imported into the United Kingdom are to be paid into a sterling account at the Bank of England, to be allocated in certain proportions as to payment for goods, freight, insurance, and so forth.

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### Derwent Valley Light Railway

This single-line standard-gauge railway of 16 miles which links up with the L.N.E.R. at York and Cliff Common was not brought under Government control last September, as were the generality of railways, and it therefore publishes its full accounts and statistical returns for 1939. The company has no regular passenger service, although parcels and mails are carried and excursion trains are run during the summer months when required. The tonnage of goods traffic in 1939 amounted to 58,379 tons, an increase of 5,400 tons as compared with 1938; the improvement was due very largely to greater movement of fuel. The operating ratio improved from 78.50 per cent. to 73.55 per cent.

	1937	1938	1939
	£	£	£
Passenger train receipts	95	80	105
Goods train receipts	6,742	7,168	7,517
Total receipts	6,895	7,311	7,704
Expenditure	6,016	5,739	5,666
Net railway receipts	879	1,572	2,038
Net revenue	1,372	1,785	2,178

Collection and delivery of parcels and goods resulted in a loss of £318 or £95 more than that for the previous year. Passengers carried numbered 316 compared with 474 in 1938. Train-miles run during 1939 were 44 coaching and 10,585 goods, comparing with 102 and 10,476 respectively in 1938.

\* \* \* \*

### North London Electrification Progress

The continued progress, despite wartime conditions, of the North London electrification scheme which is being undertaken by the London Passenger Transport Board and the L.N.E.R., is shown by the announcement (which we recorded briefly on March 15) that the L.N.E.R. and L.M.S.R. steam trains serving the High Barnet branch will run for the last time on Saturday, April 13. This amounts to the final withdrawal of steam services to all stations on this group of lines west of East Finchley. For six months past there has been no train service on the single-line branch to Edgware, and meanwhile a special bus service between Finchley and Edgware is being run by London Transport at the request (and cost) of the L.N.E.R. It was begun on September 11 and is maintained with single-deck vehicles. From April 14 the High Barnet branch stations, namely, Finchley (Church End)—which is being renamed Finchley Central—West Finchley, Woodside Park, Totteridge & Whetstone, and High Barnet, will be served by an extension of the Northern Line tube trains of London Transport at present operating from South London through the West End to Archway (Highgate) and East Finchley. For the time being, L.N.E.R. and L.M.S.R. steam trains will continue to serve the Alexandra Palace branch and also East Finchley. Passengers will thus be able to exchange at East Finchley between the new Underground service and the steam trains.

### Vickers Chairman's Review

Shareholders of Vickers Limited will no doubt appreciate the precedent established in the latest report and accounts issued by the company. The value of that document, always eagerly awaited because of the position the undertaking and its associates hold in heavy industry, is greatly enhanced by a comprehensive and informative review by the Chairman, Mr. A. A. Jamieson, and by the inclusion of the results of all the large companies in the group. In effect shareholders are given in concise form a great deal of detail for which ordinarily they would have to await the annual meeting. Substantial repayments of loans or debentures have been made by the English Steel Corporation, Taylor Bros., and by Metropolitan-Cammell Carriage & Wagon Co. Ltd. The last-named has repaid debentures amounting to £300,000 and is likely to continue the process during the current year. In addition, it is again paying a dividend of 8 per cent. free of tax and has placed £100,000 to general reserve. This company's balance sheet is published for the first time and discloses a very strong position, although higher taxation has lowered profits. Apart from orders for wagons from Turkey and South Africa and for coaches from Thailand, it has been employed on important Government work which has tended to increase since the outbreak of war.

\* \* \* \*

### The Railways of Rhodesia

The British South Africa Company, which was incorporated by Royal Charter on October 29, 1889, has had a substantial interest in the Rhodesian railway system during the 50 years of its existence. At present its proprietary interest in Rhodesia Railways Limited is represented by its holding of 1,608,201 out of 2,005,767 issued shares of Rhodesia Railways Trust Limited, which itself holds the whole of the share capital of Rhodesia Railways Limited, namely 500,000 shares of £1 each. The trust received in April, 1939, a dividend of £100,000 in respect of the year ended September 30, 1939. Net earnings of the railways in that year were £1,386,843, against £1,920,273 in 1937-38 and £1,932,662 in 1936-37. The decrease in gross revenue of £549,460 or 10.9 per cent. for the year 1938-39 in comparison with 1937-38 was due largely to the special reductions in agreement rates made to the Northern Rhodesia copper mining companies from October 1, 1938, and to the general reduction in fares and rates which operated from January 1, 1939. Approximate gross receipts of the system, including the Beira and Shabani Railways, for the three months ended December 31, 1939, were £1,385,860, a decrease of £66,982.

\* \* \* \*

### One-Sided Stations

Although railway centenaries now crowd so thick and fast that those of the openings of individual sections of line present an almost continuous procession, the centenary of the public opening on March 30, 1840, of the Great Western Railway from Twyford on to Reading, is attended by several features of special historical interest. Reading was the first provincial town of importance to be reached by the G.W.R., and Brunel celebrated the occasion by providing the first of his afterwards famous—or notorious—type of one-sided station, comprising separate but adjacent up and down stations (each having more than one platform face), both of which were located on the south side of the railway. This curious arrangement was motivated partly by considerations of convenient access by road, and partly because the town spread out to the south of the railway—it was not appreciated, apparently, that the advent of the railway would soon foster development on the other side. Whilst the layout enabled non-stopping

trains to pass clear of the station altogether, the conflicting movements made by trains entering and leaving the platform roads were a source of operating difficulty.

\* \* \* \*

### Gooch's First Locomotive

The opening of the G.W.R. to Reading was noteworthy for the fact that it coincided, to within a few days, with the introduction of the first engine to be designed for the company by its young Locomotive Superintendent, Daniel Gooch, who from being a protégé of Brunel's, rose eventually to the chairmanship of the Great Western Railway and a knighthood. This first locomotive of Gooch's own design (previous engines had been designed mainly by contracting manufacturers, in many cases with very unsatisfactory results), was the 7-ft. 2-2-2 *Firefly*, constructed by Jones, Turner & Evans. On a special run with three vehicles conveying the directors and their guests just before the public opening to Reading, *Firefly* is credited (MacDermot's "History of the G.W.R.," Vol. 1, p. 99) with covering the 35½ miles from Paddington (Old station) in 45 min., which running time is today—thanks to the restriction imposed by war conditions—the standard non-stop time between Paddington and Reading, 36 miles.

\* \* \* \*

### 700-ton Express Trains

At the time of the introduction of the first Gresley Pacifics, in 1922, when 400-ton loads were regarded as somewhere near the limit in passenger service, the designer announced that the new engines were intended to be capable of handling 600-ton trains, if necessary, on normal express schedules, and proved it without delay by taking a 600-ton test load down to Grantham on the 2 hr. booking of the Flying Scotsman then in operation. Conditions of the present war are causing even this figure to be left well behind on the L.N.E.R. main line, and loads of 21 coaches or some 750 tons gross weight may now often be seen. On a recent journey, with a total load of about 720 tons, we noted the attainment of 66 m.p.h. on the level by an "A3" class Pacific, which was well able to keep time throughout the journey.

\* \* \* \*

### Efficient Lighting

One of the peculiarities of the time in which we are now living is that scientific progress in certain directions has not only been halted but actually reversed. Railway lighting engineers who have studied for years to produce the best effects with modern high-efficiency lamps must now seek to nullify their own work to create an acceptable blackout. Lamps are hooded at great cost with can-like fittings that are so perforated as to let through only the most meagre portion of the light liberated within. Others are painted with a blue stain and shielded so that they are just a little, but only a little, better than no lamp at all. This depressing theme might be pursued further but our intention now is to divert attention away from the blackout rather than towards it. Inside workshops and other structures it is still possible to continue the pursuit of efficiency in lighting provided that reasonable care has been taken to cover up windows and to construct light traps at doors and ventilators. With depleted staffs it is of greater importance than ever to provide conditions of working that are conducive to high individual outputs. This thesis is developed very fully in a book recently issued by the British Electrical Development Association and the E.L.M.A. Lighting Service Bureau and entitled "Modern Factory Lighting including Special Wartime Requirements."

## The City Looks Ahead

NOW that the terms of the railway agreement with the Government are known and the annual meetings of the companies have been held, the Stock Exchange has little to "go for" in home rails in the immediate future. It lacks even the peacetime stimulus of the weekly traffic announcements to assist in the maintenance of a normal volume of stock turnover which is the objective of all good brokers. One of them has therefore been seeking to probe the future and reaches the conclusion that the railway companies are unlikely to break away from their present wartime unity of control. Just as the formation of the present four groups was the sequel of the control exercised in the last war, so, it is argued, will the present emergency result in a single board, controlling the four main lines still under their respective managements, directly responsible to the Ministry of Transport. The enquiring broker has even gone so far as to suggest a name—albeit a somewhat banal one—for the control organisation: the National Transport Board. The possibility that the present control will result ultimately in some such development has been mentioned on various occasions in *THE RAILWAY GAZETTE*.

Whatever the outcome may be—no doubt the duration both of the war and of Government control will be important factors—it may at least be asserted with confidence that by the terms of the present financial agreement the position of railway stockholders in a development such as that envisaged has been made much stronger than it was prior to the war. Then negotiators on behalf of the railways at the best could have argued for some recognition of the Statutory Standard Revenues, which, since they have never been attained, have lost much of their intended weight with a large section of the public and with Members of Parliament. Now there is a guaranteed minimum revenue of £41,000,000, equal to 1 per cent. on L.M.S.R. ordinary, 1.2 per cent. on L.N.E.R. 2nd preference, 3.3 per cent. on G.W.R. ordinary, and 0.8 per cent. on Southern deferred. On any equitable basis of exchange for Government or quasi-public corporation securities, such as L.P.T.B. stocks, it would seem that these securities should be at least assured of the returns now guaranteed; since the backing would be improved their market values should be enhanced.

\* \* \* \*

## Reichsbahn Results in 1939

A PRELIMINARY statement on the results of the working of the German State Railway in 1939 has been issued officially to the press in Berlin. It dwells on the heavy tasks imposed on the management by the political events of the year, culminating in the invasion of Poland and the Western war. Long-distance motor lorry transport has declined greatly, and the railways and waterways have thus had to handle heavy additional commercial traffic, apart from increased traffic, due to military requirements. Political changes and war conquests have added further sections of line to the system, and the Reichsbahn has been called upon to provide large numbers of staff in such places. The legal position of the undertaking as State property, but with its own financial services and accounts independent of the national budget, was finally defined in a law which came into force on July 12 last, which is considered to give the Reichsbahn greater freedom than is possible in the more formal kind of State organisation. Close collaboration with the Minister of Finance, and the fact that the General Manager of the German State Railway is Minister of Transport, ensure "sufficient attention being given to broad general considerations, free from a too exclusively railway interest."

The reduction in the autumn of the ordinary passenger



and goods services led to a corresponding fall in receipts, but this position is stated to have improved gradually and it is expected that total receipts will come to about RM. 5,650,000,000, or some 10 per cent. more than in 1938. Expenses, of course, have risen; the number of staff employed had to be increased, and maintenance of track and rolling stock cost more. The railway pays to general State funds (in addition to the ordinary transport tax) 3 per cent. of all receipts up to 4,600 million marks and 10 per cent. of anything over. The undertaking also has some income from sources other than traffic, and this, with the working receipts, is stated to be sufficient to meet all charges—interest, depreciation, pensions, etc.—for last year. Charges to capital account for station and track improvements, especially in the Austrian districts, and for new rolling stock, are heavy.

To assist in meeting the capital position a new  $4\frac{1}{2}$  per cent. loan of RM. 500,000,000 was floated in November, redeemable in 8 years. About 200 millions had been placed, previously, and the remainder was sought from public subscriptions, which, it is stated, were at once forthcoming. The long-term debt, after taking over the obligations of the former Austrian Federal Railways and redeeming certain others during the year, amounted to about RM. 3,350,000,000. The value of the property was estimated at RM. 35,000,000,000 and the capital as RM. 19,000,000,000 at the beginning of the year, and the added value of the Austrian lines is given as about RM. 5,000,000,000. Work has been continued on the sister undertaking, the national motor roads. New regulations concerning auditing came into force during the year. Prospects, notwithstanding the serious situation arising from the war, are officially regarded by the German authorities as encouraging, and the response to the November loan is held to show that this view is widely shared in Germany.

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### Palestine Railways

THE Palestine Railways Administration operates the Rafa—Haifa and Jaffa—Jerusalem lines, 333 km. of standard gauge, which are in Palestine proper and owned by the Government of Palestine; the Kantara (Suez Canal)—Rafa line, 203 km. of standard gauge, which is in Sinai and belongs to the British Government; and the Hedjaz Railway, 434 km. of narrow gauge, of which 111 km. are in Palestine and 323 km. in Trans-Jordan, the connecting link being operated by the Syrian authorities. The whole system aggregates 971 km. or 603½ route miles. In addition there are the 33 km. of the Tulkarm—Nablus line closed to traffic in 1938-39 after damage by sabotage. During the year ended March 31, 1939, on which we have received the report\* by Mr. C. R. Webb, the General Manager, the railway continued to suffer severely from the disturbed political situation in Palestine. Not only were social, commercial and industrial activities affected, and therefore the volume of traffic, but the railway itself was subjected to frequent attacks and acts of sabotage. There were no fewer than 690 separately recorded cases of attack or sabotage on the railway, and 44 trains were derailed and in some cases badly wrecked. Certain sections had to be closed altogether, and on others train services had to be limited, running being possible only in daylight. Passenger traffic was further limited by the restrictions imposed on movement by the military authorities. In these circumstances it is not surprising, says the report, that although there was a considerable decrease in working expenses, the accounts for the year reveal a

heavy deficit. For similar reasons the usual comparison of operating statistics with those of other years loses much of its value. The working results of the three main sections are compared in the following table:—

	1937-38 £P.	1938-39 £P.	Inc. or Dec. £P.
<b>Palestine Railway</b>			
Gross receipts ...	478,953	326,874	— 152,079
Working expenditure ...	459,931	375,880	— 84,051
Net receipts ...	19,022	Dr. 49,006	— 68,028
<b>El Kantara-Rafa Railway</b>			
Gross receipts ...	109,507	89,911	— 19,596
Working expenditure ...	109,435	97,904	— 11,531
Net receipts ...	72	Dr. 7,993	— 8,065
<b>Hedjaz Railway</b>			
Gross receipts ...	80,930	73,670	— 7,260
Working expenditure ...	119,587	97,552	— 22,035
Net receipts ...	Dr. 38,657	Dr. 23,882	+ 14,775

The Petah-Tiqva section showed a reduction in net earnings of £P. 652.

As was to be expected, most of the traffics showed decreases, and the only increases were in grains, citrus fruits, and potash. In spite of the difficulties the railway carried a record quantity of citrus fruits to Haifa, consisting of some 23,300 wagons containing approximately 7,200,700 cases of fruit. The transport of this traffic, in daylight only and in such difficult conditions, involved some very uneconomical and unorthodox operating methods. It was necessary to run convoys of trains following each other within sight and preceded by an armoured trolley. On the whole system the total number of passengers was 1,048,759, a reduction of 1,389,730 compared with 1937-38, and coaching receipts at £P.114,743 were £P.112,708 less than in the previous year. The reduction in goods traffic was not so marked, but there was a decrease, the total of 825,860 tons, being 133,549 tons less, and receipts, at £P.326,234, being less by £P.63,530. Adding £P.5,750 for livestock and £P.46,713 for sundry receipts, brings gross earnings for the whole system to £P.493,440, or £P.179,587 less than the corresponding total for 1937-38, a reduction of over 29 per cent. As regards expenditure the report says that ordinary maintenance work of both permanent way and locomotives and rolling stock was constantly interrupted by the immediate repairs necessitated by sabotage and defence measures. For this reason there was less expenditure on ordinary maintenance, but the work fell into arrears. Over £P.66,000 was spent during the war on repairing damage through sabotage and on additional operating expenses through derailments, etc. The arduous and dangerous nature of the work of the railway staff during the period of political unrest is revealed by the fact that 13 employees lost their lives and 123 were injured while on duty, as a consequence of attacks or acts of sabotage. The General Manager records his appreciation of the manner in which the staff worked throughout the year, although exposed constantly to danger, intimidation, and subversive influence.

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### Locomotive Tyre Failures

THE useful life of a locomotive tyre may be determined by either of two events. First the tyre may wear until the thickness or the profile, or both, reaches a pre-determined limit; or, secondly, some defect may be manifested which prompts the withdrawal of the tyre from service before it is fully worn. The matter is one of very considerable importance and it was ably dealt with in a paper entitled "An Investigation into the Occurrence and Causes of Locomotive Tyre Failures," by Mr. C. W. Newberry, B.Sc., submitted to the Institution of Mechanical Engineers and reproduced in the January,

\* Obtainable from the Crown Agents for the Colonies, 4, Millbank, S.W.1. Price 3s. net



1940, issue of the *Journal and Proceedings*. For many years it has been the practice of the L.M.S.R. to make some kind of investigation whenever a tyre has broken in service. A study of such of these records as are available reveals, however, that the primary object of such investigations was apparently to ascertain whether the material accorded with the specification and the matter was not often pursued much further than that. The number of actual tyre breakages in any year was comparatively small and little information can be deduced from them, even on a statistical basis.

There are, however, some points of interest, particularly where the seasonal occurrence of failures is concerned. A more complete and systematised investigation was put in hand and prior to this, whilst a good deal was known, it was only in a vague sort of way regarding the susceptibility of locomotive tyres to certain kinds of defects. It had, for instance, long been known that a proportion of fractures showed evidence of progressive flaws, and tyres were accordingly subjected to very close scrutiny when they were in the repair shops. Those which showed a suspicion of a progressing fracture were scrapped ruthlessly in the interests of safety but no record was kept of the characteristic features of the cracks or of the number of tyres condemned for this cause. One of the first steps to be taken at the beginning of this research in 1934 was, therefore, to institute a system of recording tyres found broken or defective in any way, and a suitable intelligence service was organised to keep the author of the paper promptly informed of any tyre failure on the whole of the London Midland & Scottish Railway system. The word "failure" is in this connection used in a broad

sense and is taken to mean premature removal from service on account of defects of any kind, whether discovered in service or during repair. By these means it was found possible to attack the problem in two main stages. The first was to investigate each failure and to determine, if possible, its individual causes. At the same time as many data as possible were collected to serve as a basis for the second stage, which was to analyse statistically the results obtained with a view to finding some general relationships among possible causes and effects.

One of the first and most striking features of the investigation has been the preponderance of defects due to fatigue, the proportion of fatigue failures being nearly 80 per cent. of the total. The other failures were mostly due to defective material. It has been shown that a definite relationship exists between the size of the wheel and the occurrence of fatigue failure. The author was able to show in the course of his paper that the larger tyres sustained fatigue flaws at a greater mean thickness than the smaller ones, which means that the liability to fatigue is greater. Increase in the size of the wheel affects so many other factors which are interdependent with the incidence of fatigue failure that it must not be assumed that an increase in diameter will weaken a tyre to fatigue. Indirectly it will do so, owing to the increased arc of contact at the rail and the consequent increase of flange forces through the increased mass and also through the reduced rigidity. It is these factors which must be borne in mind in designing a locomotive wheel that will help to give immunity from fatigue failure. An example of the methods employed during the investigation is detailed on page 459 of this issue.

## PUBLICATIONS RECEIVED

**The History of Bradshaw.** By G. Royde Smith. London: Henry Blacklock & Co. Ltd., Bradshaw House, Surrey Street, Strand, W.C.2; Manchester: Albert Square. 11½ in. × 8½ in. 76 pp. Illustrated. Price 3s. 6d. net.—Mr. Royde Smith's happy and interesting style of writing, which already has been turned to good account by the L.M.S.R. in the preparation of the centenary volume, "Old Euston," has found further scope in the railway field in the centenary of Bradshaw. Few will deny the accuracy of the sub-title to the present volume, "A Centenary Review of the Origin and Growth of the Most Famous Guide in the World." For one reason or another, Bradshaw's timetable has long since ceased to be regarded merely as a timetable, but has become an institution which many delight in, some revile, but few can ignore. In the preliminary announcements of Mr. Royde Smith's volume the sub-title used was "The Man and his Timetables" and this really describes the work more vividly and accurately than the sober sub-title eventually adopted. This is no mere biographical study such as delights the limited but highly specialised class of enthusiastic reader; it is a bright character study of the man and his times, and naturally of the guide which still bears his name, as this was his lasting work. The illustrations are

admirable, and an air of antiquity has been imparted to many of them by black and white reproduction over a pale buff tint.

**Statistics of the Railways in the United States.**—The Interstate Commerce Commission issues three main reports relating to railways, comprising a comparative statement of operating statistics of railways having revenues of over \$5,000,000, a general report on transport of all descriptions, and the present volume, which contains the financial and operating figures for all the railways of the U.S.A. for the year ended December 31, 1938. Although this work deals principally with railway statistics, it also includes selected data from the reports of other common carriers, except motor carriers. As in previous years the companies are classified regionally, and on the basis of operating revenues.

**Tool Steel Toughening.**—The feature of the Macrome treatment of tool steels to increase the toughness is that in no sense is it merely a surface deposition or casehardening process, but affects the whole bulk of the steel. Of just what the treatment consists is not explained in the booklet and descriptive material sent to us by Macrome Limited, of Hay Mills, Birmingham, but it is claimed that steels so treated not only have a life up to

three times greater than that of untreated steels, but that in the case of tools the output per re-grind is greater. Treatment can be given in 24 hr., and normally a three- to four-day delivery is maintained. Macrome-treated steels are applied to railway wheels, rails, and crossings, as well as to tool steels and rock drills.

**RAILWAY BENEVOLENT INSTITUTION.**—In view of the present abnormal conditions it has been decided not to proceed with the arrangements for the festival dinner provisionally fixed for April 19. The total of the list of contributions which would normally be announced at the festival will this year be reported to the members at the annual meeting in June. It is hoped that the funds of the institution will not suffer as a result of the cancellation of the dinner, but that the collection on the occasion of Mr. Holland-Martin's presidency may be substantial having regard to the urgent need for additional funds to relieve cases of distress arising in the railway service.

**NEW £25,000 EAST INDIAN RAILWAY STATION.**—On February 29, Sir Thomas Stewart, Governor of Behar, officially opened the new station buildings at Patna junction on the East Indian Railway main line. The station now supplanted was opened in 1862, and the present remodelling began in March, 1937; its cost is estimated at Rs. 3,35,000 or over £25,000.

## THE SCRAP HEAP

### THE FEMININE LOCOMOTIVE

Mr. A. A. Gardiner, of the Canadian National Railways, has diagnosed the reason for calling a locomotive "she." In a recent address at Montreal he said: "They wear jackets with yokes, pins, hangers, straps, and stays. They have aprons, also a lap, and not only shoes but pumps and hose. They surmount great obstacles but sometimes jump the track at the slightest provocation."

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### A 96-YEAR OLD IRISH RAILWAYMAN

One of the Dublin daily papers, commenting on the memory of a Dublin man who could remember the Franco-Prussian War, drew forth a communication from Mr. C. R. Riley, who stated he could remember not alone the Franco-Prussian War, but also the Crimean War of 86 years ago, when he was ten years of age. This newspaper remarked that Mr. Riley's handwriting was as firm and clear as that of many persons fifty years his junior. Mr. Riley was for many years Stores Superintendent of the Great Southern & Western Railway at Inchicore, and is the father of Mr. C. E. Riley, a former Secretary of the Great Southern & Western Railway, who became Secretary, and subsequently General Manager of the amalgamated companies in succession to Mr. M. F. Keogh.

\* \* \*

Miss Mary Churchill, youngest daughter of Mr. Winston Churchill, narrowly escaped serious injury when clinging to the doors of a City-bound Metropolitan Line train on March 15. It appears that she jumped on the footboard of the train at South Kensington but was unable to pull open the doors. She remained on the running board as the train gathered speed, and at the end of the platform threw herself off and rolled down the ramp. It was reported later that Miss Churchill, who is 17, "was shaken but quite all right."

A member of our editorial staff had a practically identical experience during the last war, on the same section of railway, and when he was 17 years old. Boarding a Metropolitan Railway Inner Circle train which was about to move, the doors stuck, and he records the vivid memory of those brief seconds when every possible action seemed fraught with peril.

\* \* \*

Lieutenant X, of the French engineering corps, loves railway engines. It hurt him so much to see one that had been forgotten standing on its lines out in No-man's-land, just rusting away. So he organised a rescue party. In the darkness men from a French outpost crawled with him to the engine. It stood only 100 yards from the German lines. But all through the night those Frenchmen passed little buckets of water from hand to hand,

forming a human chain between the engine boiler and the cold waters of the River Lauter. The Germans never spotted them.

Just before dawn, Lieutenant X sent his men back to their outpost near Lauterburg. Then he started a fire under the boiler. He used wood because it makes less smoke than coal. If the Germans saw smoke coming from the funnel they might start something. All morning he lay in the cab, stoking the furnace. It took all that time to get steam up because the water from the river was so cold. And all the time the Germans noticed nothing.

Then the gauge showed him the engine was ready to move off. He gave a signal to his men to move the front-line barbed wire where it crossed the track. And slowly the engine moved off. Lieutenant X ran along beside it at first, using it as cover from the Germans. But still the Germans didn't seem to notice anything.

So he jumped back into the cab and raised speed, lying flat on his stomach to drive. Then, at last, the Germans woke up. Rifle bullets sang round the engine. They all missed. Lieutenant X drove the locomotive into the French lines, amid the cheering of his men.—*From the "Daily Express."*

### SPOTLIGHT ON COAL

The inevitable reaction of the coal situation on railway services launched us on one of our whimsical searches for errors and absurdities in lay publications. Apart, however, from bagging a few strange and apocryphal statistics, we scored little success at the outset, although the picture of a trainload of precious combustible "rumbling through Hatfield" (it happened to be Welwyn

Garden City) brought a glint to our eyes. Only momentarily, though, for we realised, first, that the scribe had not made such a "boss shot" as he would have with, say, Tempsford, Corby, or Rossington, and, secondly, that it was probably a laudable, if somewhat half-hearted, attempt to hoodwink a lurking enemy.

We were on the point of scuttling ourselves in desperation, when an evening journal confronted us with the splendid tidings that a certain railway was "reducing the number of sleeping cars on night trains to cope with coal traffic." Does this mean that aforementioned railway is to inaugurate a novel species of mixed train, or, to score a victory over the people who give their potatoes seats in third class carriages, that it proposes seriously to tuck up sacks of coal in bed? We await enlightenment.

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### BOSTON & MAINE FÊTES 50-YEAR COMMUTERS

The Boston & Maine invited 67 active commuters who have travelled on its suburban trains each business day for 50 years or more to a dinner in the Hotel Manger, Boston, Mass., on February 5 and presented each with a dainty lapel-pin of solid gold carrying the inscription "Fifty-Year Commuter—Boston & Maine Railroad." The event brought forth a large and sympathetic response from the press and radio, and from the commuters themselves a flood of letters which indicated a sincere and serious appreciation of the recognition which the railroad bestowed. The day after the dinner, a multi-column "story" appeared on the front page of every Boston metropolitan daily newspaper (all of the Boston papers had reporters and photographers at the dinner).—*From the "Railway Age."*



The postcard reproduced above, bearing the postmark date September 15, 1917, was duly passed by the Field Censor in France. It is reproduced from a recent issue of the "600 Magazine," the house organ of George Cohen, Sons & Co. Ltd. The brilliant word-for-word "translation" into English of the French caption will be noticed

## OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

### SOUTH AFRICA

#### Hercules—Koedoespoort Construction

In November last work began on the construction of another short but important line from Hercules to Koedoespoort, just north of Pretoria; it is an item in the Pretoria new works programme. For some time it had been realised that such a line would be necessary, and its survey was completed over 12 years ago.

Traffic at Pretoria was at one time mainly local, but is now of considerable main-line importance, and the marshalling and other facilities at this centre are being severely taxed, necessitating a removal from the cramped area near the station to the Eloff Estate, Capital Park, of the marshalling yard and locomotive depot. The old site of the latter near Pretoria station will be available for the urgently-needed expansion of the mechanical workshops.

#### Value and Description of New Line

The new site of these yards will be directly connected by the new line with the eastern and northern main lines, the congestion of Pretoria yard being avoided by the latter connection, which forms a valuable relief line.

The new line will be seven miles long and will be laid with 96-lb. permanent way. Earthwork is light but, to avoid level crossings, there will be three road underbridges and four overbridges, and two streams also have to be bridged. The ruling gradient will be 1 in 66.6 in both directions, compensated for curvature.

#### New Marshalling Yard and Locomotive Depot

Good progress has already been made upon the new marshalling and locomotive yards, 130,000 cu. yd. of spoil having been dumped in the embankments, and 80,000 ft. of permanent way and over 100 sets of points and crossings having been laid. Foundations of pits and structures connected with the running shed have been completed. The shed itself will be 315 ft. long by 72 ft. wide and its steelwork is in hand. The new line and works generally are expected to be finished by March, 1941.

### WESTERN AUSTRALIA

#### Christmas and other Holiday Traffic

Passenger traffic from country and goldfields centres to the city immediately prior to the Christmas holiday season has been particularly heavy, and during the Christmas and New Year holidays a steady exodus of city workers to the various holiday resorts was evident. Over the holiday period country travel on the railways showed

an appreciable increase, but a reduction in travel on the suburban system was recorded, due doubtless to motor competition. Country holiday resorts this year have recorded increased bookings in practically every instance, this being due in a large measure to the war, travel outside the state being less, and people who would otherwise have occupied their holidays in interstate and foreign travel, visiting the local tourist resorts instead. As was the case last year, the special holiday excursion rail fares were continued without a break between Christmas and Easter.

#### Interstate Passenger Traffic

During recent months passenger traffic over the Trans-Australian railway between Western Australia and the Eastern States has been particularly heavy in both directions and it has been found necessary to run special trains to handle it. The normal timetable over the Commonwealth section of the journey—between Kalgoorlie in Western Australia and Port Pirie in South Australia, a distance of 1,108 miles—is three trains weekly in each direction, each train having accommodation for over 100 passengers. During December, 1939, however, three special trains were run from Western Australia to cope with the heavy passenger bookings. In fact, during the week ended December 23 the total bookings for the week constituted a record for the past ten years.

The war has doubtless had a big effect in transferring interstate traffic from sea to rail, but air-conditioning and faster schedules have also played a considerable part in enhancing the popularity of the overland journey.

### INDIA

#### Shershah Bridge, N.W.R., to be Re-girdered

The Railway Board has decided to include in the 1940-41 programme the re-girdering of the Shershah bridge over the Chenab river near Multan. This bridge consists of 17 through-type spans each 200 ft. in length, and carries a single broad gauge track and a roadway on the same deck. The new spans are being designed entirely in the office of the Deputy Chief Engineer, Bridges, North Western Railway, and will carry a single broad gauge track on the lower deck, and an 18-ft. roadway on the top booms; they are designed for "B.L." standard loading.

#### Railway Work in Alleviation of Famine Distress

In a vast agricultural country like India in which the success of the crops is so largely dependent on favour of Barun, the rain-god, an efficient railway system enables the alleviation of much distress during times of famine. The history of British rule in India before

the country was covered with a network of railways, records many an anxious moment for successive Governors-General for the relief of acute distress caused by widespread famine. With the failure of the monsoon last year, famine conditions now prevail throughout Rajputana and Kathiawar. These areas are largely composed of territories under Indian States, and energetic steps have been taken by the various Governments to relieve suffering. For over two months past the metre-gauge system of the B.B. & C.I.R. has been called upon to carry goods traffic of unprecedented volume as very large quantities of grain and fodder of all kinds had been ordered for transport to the afflicted areas. On some sections of the railway, it has been found impossible to deal with the traffic offered until certain emergent steps had been taken. Pooling of engines, increase in staff, the appointment of an officer to co-ordinate traffic and locomotive working, and other effective measures, have made possible the running of additional trains. Marshalling yards of limited capacity have been dealing with more than one thousand wagons daily and still the traffic continues to flow. It is expected that there will be very little relaxation until the monsoon sets in. The additional strain and heavy work imposed upon the staff may well be realised when it is stated that some of these yards have been despatching as many as 20 goods trains daily.

### CHINA

#### French Loan for Kunming-Suifu Line

A contract is stated to have been signed for a French loan of fr. 480,000,000 to the Chungking Government, for the construction of the Kunming-Suifu railway, a distance of about 720 km. It is likely, therefore, to have some semblance to an extension of the French Yunnan Railway now connecting Hanoi with Kunming; Suifu is on the Yangtze not far above Chungking.

#### Present-day Peking Train Services

There are now 20 daily express and passenger trains dealt with at Chienmen station, Peking, 10 departures and 10 arrivals. The most important are the two each way between Peking and Seoul in Chosen 6.50 a.m. and 6 p.m. departures, and 9.35 a.m. and 9.40 p.m. arrivals; these give through connections to Japan. Three others each way go to and come from Mukden, and one each way gives through service with the Tientsin-Pukow line to Nanking, if not actually to Shanghai. In addition there is one train each way to and from Kupeikow, for Jehol, which is in addition to five other trains each way proceeding over this line as far as Tungchow, but using Peking East station.

From the respective other stations there are three trains each way daily along the Kalgan-Tatung-Paotou line—one terminating or originating at each of the stations named—and three along the Hankow line, the furthest ter-



minal point reached being Sinsiang in Honan.

### New Workshops for North China

The North China Communications Company is reported to have announced that in July next work will begin upon the construction of new locomotive, carriage, and wagon shops at Changkueichuang, estimated to cost \$30,000,000. The capacity aimed at is 1,000 wagons in the next three years.

## DENMARK

### Rationalisation of Transport

Three years ago, Herr Fisker, Minister of Transport, appointed a commission to report on the whole question of improving and rationalising the transport facilities of the country, sea transport excluded. The Chairman, Mr. N. P. Nielsen, a Member of Parliament, recently made an announcement on the results of the work of the commission. The report covers the revision of the laws affecting bus and lorry services, State aid to private lines, pension and other questions affecting private railway staff taken over by the State, the closing of certain State Railway sections, and co-ordination of transport services.

The results have not been altogether what was expected, no general plan of co-ordination being presented, as the commission considered that it was impossible to do this while sea transport was excluded from its scope; in Denmark the coastwise services play an unusually large part in the general transport of the country. In other ways, however, the report is stated to offer some valuable constructive proposals, concerning wages and hours of work of motor vehicle drivers, the facilities for ferrying these vehicles across the waterways, the granting of loans to assist such private railways as are regarded as essential, and compensation for the staff of private lines rendered redundant by changes. The commission recommends the closing of the State Railway section between Skern and Videbaek on the Skaelskør line, and the Himmerland and Assen lines; this is expected to save Kr. 750,000 per annum. It is thought that the Government will be sympathetic towards assisting the private lines.

## ITALY

### Short Cuts between Genoa and the Brenner

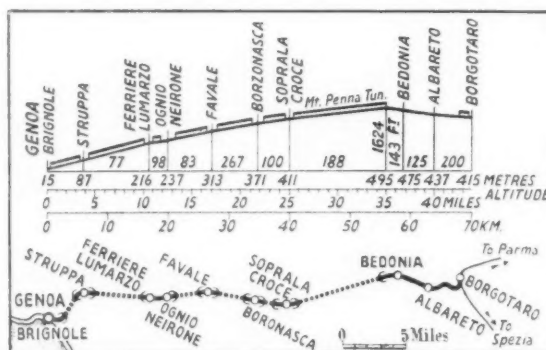
Mention was made on page 459 in THE RAILWAY GAZETTE of March 17, 1939, of the two alternative lines which were being considered for construction in order to provide a more direct route from Genoa to the Italo-German frontier in the Brenner pass, and so a better competitor with the Swiss Gotthard route for traffic to Central Europe. These were (a) Genoa to Borgotaro, on the Parma-Spezia line, and (b) Genoa to Piacenza.

As a result of surveys since carried out it appears that alternative (a) is the more favoured and its construction

is being considered by the State Railways administration, together with that of another new link to shorten the through route, namely from Casalmaggiore to Bozzaolo. Casalmaggiore is between Parma and Breccia, and Bozzaolo between Cremona and Mantua, so that the new link would form a chord avoiding the detour *via* Piacenza. It is estimated that the distance from Genoa to the Brenner will be reduced by about 70 km. if these two lines are built.

Another advantage claimed for the Genoa-Borgotaro line is that it makes possible a fairly direct inland route between Rome and Genoa, *via* Florence and Bologna, or, if another short link is built to connect Equi Terme and Castelnuovo di Garfajana, *via* Florence, Pistoia, Lucca, Equi Terme, and Aulla.

If the line between Genoa and Borgotaro is built according to the alignment surveyed, it will be a remarkable piece of engineering, though scenically it will not greatly surpass a London tube. As will be seen from the plan and longitudinal section, 45 km. out of the first 56 km. from the junction outside Genoa will be in tunnel, and there will be a continuous rise throughout this section, with grades varying from 1 in 77 to 1 in 267, to reach the summit at the east end of Monte Penna tunnel, 1,624 ft. above sea level. A very direct and comparatively easily graded line is thus secured at the expense of so much tunnelling right across the drainage of the country. The line would start from the Brignole station at Genoa and be worked by electric traction.



Left: Detail longitudinal section and plan of the line as surveyed from Genoa to Borgotaro



Map showing Genoa-Borgotaro and other short-cuts making for a more direct route from Genoa to the Brenner pass and alternative inland routes to Rome via Florence

## THE OUTDOOR MACHINERY DEPARTMENT—III\*

*Notes on the constitution, duties, and relationships with other departments of the Outdoor Machinery Department of a British main-line railway*

*By J. DALZIEL, formerly Assistant Electrical Engineer, L.M.S.R.*

THE main function of the O.D.M. Department as regards new work is to assist the Operating Department in the selection and installation of the machinery it employs. Where the provision of machinery forms part of a scheme the using department is first concerned to define its purpose and working conditions; thereafter the two departments to a great extent will be concerned jointly, and the earlier the stage at which contact is established between them, and the more closely it is maintained up to the point of setting the plant to work, the more time and work are likely to be saved, and the greater the probable success of the plant. The wider the basis of discussions, and the more fully all likely to be concerned with the plant are brought into them, the better. The great bulk of these schemes involve little more than the further application of methods already in use, and, to the Outdoor Machinery Department, the perpetuation, with minor improvements suggested by experience, of established types of plant. As previously stated, where plant of new type for the same operating purpose but presenting working or other advantages has been or can be developed it should be recommended to the operating department.

In some cases the requirements put forward may be novel to an extent necessitating the evolution on general lines of machinery of new type before they can proceed beyond the early stages; then the O.D.M. staff is forced to be creative. In a somewhat different category are schemes based on the revision of operating methods and therefore primarily affecting the Operating Department. Schemes in which it is proposed to apply machinery to processes not hitherto mechanised are of this type, and so to a greater extent are schemes having the object of fundamentally revising traffic handling methods. In such cases the O.D.M. Department in general will not be affected until the secondary stages, but it should then be of great assistance to the Operating Department in advising as to the feasibility and operation of the machinery proposed to be applied under the new conditions, and of anticipating possible difficulties and overcoming them in advance. Especially for schemes of this last type, machinery of an entirely new form may have to be devised, and this task the O.D.M. staff should be better fitted than anyone else to undertake, having regard to its close touch with operating conditions and officers.

### Relations with Special Bodies

Investigation of cases of both these kinds is sometimes entrusted to special bodies appointed outside the normal organisation; this course may be dictated by the Operating and O.D.M. staffs being pre-occupied with more routine matters. The O.D.M. staffs may still be called in to carry out the routine work of rounding up the machinery proposals of such bodies, and ordering the plant. In such circumstances responsibility, though it will finally fall on the O.D.M. as the technical department, is liable to be divided in the early stages, and difficulties may arise in such cases as where the O.D.M. officers have doubts as to the working

of a detail and do not know to what extent the investigating body has covered the point.

Criticism or enquiry may be unwelcome, especially if the investigators have independently taken outside advice; more trouble is liable to arise from such advice, given probably casually and on inadequate knowledge, and unwisely followed, than from many other causes put together. The best course for the O.D.M. officers in such cases is to thrash out the whole scheme and to voice their criticisms at once. If they defer them until they are proved correct it will be too late for them to be of any use.

### Suggested Continuous Investigation

Operating and engineering officers busy with routine work are apt to fall into ruts where improvements are looked for in perfection of detail in plant as it exists rather than in radical changes of method. In respect of these latter there is much to be said for calling in some extra-normal body, but the necessity for this, except where dictated in connection with schemes above the capacity of the departmental establishment, indicates a weakness in organisation or outlook. The railway staff should have the advantage over any such body of being entirely familiar with the processes of evolution of, and dealing with, proposals of this kind, and should be in by far the best position to appreciate the operating and other factors affecting such evolution. It is a question of adjustment of viewpoint and ideas, and what is required is therefore that some of the personnel of the Operating and O.D.M. Departments should be sufficiently unencumbered with routine work to permit of their jointly and continuously interesting themselves in new methods and new machinery and in the investigation of costs and their incidence. By inspiring joint discussion in the light of information indicating where it can be profitable, together with the encouragement of enterprise and originality among the staff, progress will be spontaneous and consistent and not forced and spasmodic as it must be when special means have to be set up to attain it.

### Preparation of Schemes by O.D.M. Department

The argument may be advanced that the O.D.M. Department need not be specially concerned with the preparation of schemes, as most of the plant in connection with them is purchased. Apart from the fact that the department is in first-hand contact with the Operating Department requiring the plant, and that details of the requirements and conditions to be met have to be transmitted through it to any outside body, it is its obvious function to advise the Operating Department as to suitable machinery and therefore to lay the foundations of a scheme.

There are cases, where new types of plant must be evolved in at least their general character, which must be decided by discussions between the departments concerned; into these it would be unsuitable and unworkable to bring an outsider. Moreover, it would be unfair to give an outside contractor the trouble of preparing a scheme which might never be applied. Many schemes also comprise various complementary sections, each of which is served by machinery different in character and make from that of the others and be ordered under different contracts; in these

\* Previous articles of this series appeared in our issues of March 1 and 15

cases the O.D.M. Department must be the co-ordinating authority. It is also clear that the department, if efficient, must be equipped for these functions, in that if it lacks the requisite creative ability it will not only be unable to fulfil them, but it will be unable to judge and criticise the proposals of its contractors, to put to them more acceptable proposals when necessary, or to analyse defects and locate shortcomings in operation and prescribe remedies.

The objection to asking a contractor for a scheme is that the firm can rarely have the full knowledge of the working conditions necessary to ensure provision for all of them, and in contrast to the free choice, available to the O.D.M. Department, of whatever may appeal as best, they may be concerned more with design and construction and utilisation of standard parts than with fitting the working conditions, which they will probably assume can be modified to suit their plant if necessary. Possibly conditions could be, but at the expense perhaps of additional labour or inconvenience in operation; in some cases they cannot.

In a composite scheme contractors can have at their disposal nothing like the facilities requisite for working out labour and other costs, or operating times, nor would they feel, as the O.D.M. staff does, the importance of reducing these. Finally, according to the writer's experience, with few exceptions they do not want to prepare such schemes, and would infinitely prefer to quote—at an appreciably lower price—to a specification setting out exactly what has to be complied with and giving assurance of preliminary investigation. The more definite a specification the more closely comparable prices are likely to be.

Before efficient O.D.M. staffs were built up, and also before competition and prices became keen and questions of "contra-account" were heard of, it was a

fairly general practice to give more or less open orders to contractors who understood that if their plant gave trouble they would not be asked again. This is at least fairer than to get a scheme from a single contractor and to broadcast it subsequently for competitive tenders. If a contractor has prepared a scheme, especially if he has spent money in investigating its conditions, he has the right to expect the order arising from it, which is a further reason for the O.D.M. Department doing all such work. There are, moreover, naturally objections to giving out a non-competitive order.

An alternative course sometimes adopted is to ask a number of firms each to prepare a scheme to meet proposals outlined in general terms. As this may involve each in a cost of £100 or more and the proposals may not be proceeded with, it is not in the writer's opinion a very fair course. It does not provide proposals on a strictly competitive basis; but on the other hand it permits authorised schemes to get under way quickly.

There is, of course, no objection to one or more firms being asked for a preliminary price for estimating purposes on the basis of a rough specification of a scheme as closely outlined as possible to final form; prices so obtained should be used with the addition of an appreciable percentage to provide for closer pricing on the actual specification, for changes in the preliminary scheme and for variations in labour and material costs. Allowance must be made for some appreciable lapse of time between the preparation of a scheme and its authorisation.

Estimates otherwise are based on the costs of previous plants of similar character, and on costs *pro rata* to weight, length of run, size, carrying capacity, etc., as applicable according to the routine of the work.

(To be continued)

## Test of Carriage-body Strength

**D**URING 1939 the German State Railway undertook some spectacular investigations into the behaviour of carriage bodies when derailed in specially dangerous situations, such as when they would be thrown down an embankment after leaving the rails. The trials were carried out on the line between Immendingen and Singen, at a place where the formation is 26 m. (about 85 ft.) above the surrounding ground and there were no trees or other obstacles in the immediate vicinity to impede the fall of the vehicles to the bottom of the bank. A welded all-steel carriage body was specially built for the principal tests and first subjected to some experimental collisions. The track was disconnected and made to form a sharp derailing turnout, with the outer rail lowered so that the vehicle would overturn and roll over down the bank. There was a road near the spot, which was thus easily accessible. As a comparison, a wooden-bodied corridor carriage built in 1894 was also derailed; films were taken of the entire tests from four different positions.

The steel vehicle, which was painted with a series of white lines to enable the marks of damage to be better detected, was first tested. After leaving the track it made  $4\frac{1}{2}$  somersaults before coming to rest, jumping into the air between them, and striking the ground several times. At the first turn little or no damage was suffered, but during the second and third the ends and the interior parts began to suffer, while the sides as yet were not materially affected. After the fourth somersault, when the carriage struck the road at the foot of the bank and turned over on the adjacent rising ground, the seats broke loose and became intermixed, showing how important it is that

they should be strongly attached to the framing. The ends were considerably affected, due to the lack of support at the end vestibules, showing that here special attention to design is needed. Otherwise the vehicle was but little damaged, but certain improvements are to be introduced as a result of the examination of this coach, to increase still further the resistance to damage.

As might be expected, a very different result followed the derailment of the 1894 coach. It broke right in two after one somersault, then the side walls fell out and remained half way down the embankment, while the rest of the vehicle was strewn all around, one bogie going to the bottom of the dip. It seems peculiar that for such a demonstration a 45-year-old coach should have been pitted against a modern vehicle. However well it had been maintained it was unlikely to have withstood any very severe derailment, let alone an 85 ft. drop. From some viewpoints a better relative test would have been with the most recent type of wooden-bodied coach. If confidence in the superiority of the all-steel vehicle were needed, such a test might have added to it, whereas the comparative test as made was practically valueless for the purpose. Nevertheless, we have no information about the precise objects of the experiments; it seems unlikely that Germany requires any further proof of the superiority of all-steel stock than she has had available for some years past, and it is possible that the tests were intended to demonstrate the comparative immunity of such stock, and the urgent desirability of scrapping out-of-date equipment, whatever its form. One point that seems to have been shown up was the importance of end-strengthening.



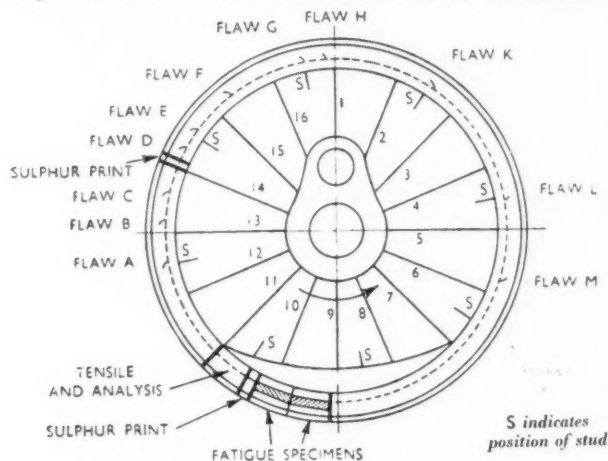
## TYRE FAILURE INVESTIGATIONS ON THE L.M.S.R.

### Analysis of a typical example in an 0-6-0 locomotive

**R**EFERENCE is made on page 452 of this issue to the investigations carried out on the London Midland & Scottish Railway as a means of studying the nature of defects in locomotive tyres and their incidence, with a view to improving still further the performance of tyres both as regards safety and length of service. A good example, taken from the paper on the subject submitted by Mr. C. W. Newberry to the Institution of Mechanical Engineers is that of a standard Class 4 (0-6-0) freight

means of a radius trammel which showed the rim to be of very good shape, the maximum variation of radius amounting to only about 0.004 in. There was no marked relationship between irregularities on the rim and the positions of fatigue flaws, although in other cases where the wheel rim has been less truly circular, there has been a marked tendency for fatigue flaws to develop at those parts of the wheel circumference where the tyre support has been diminished by a hollow in the wheel rim.

The tyre bore had been machined with a feed of 20 cuts per in. It appeared to be in good condition and to have an average finish, but on close examination the surface was seen to be covered with minute transverse fissures between the longitudinal ridges left by the cutting tool. These were much more numerous than is usual on such a tyre bore. There was a small amount of corrosion in places, but this did not seem to be associated with the flaws. A tensile test made on a test piece taken from close to the tread on the snip side of the tyre gave these results:—



Relative positions of flaws and stud fastenings

engine which, while undergoing service repairs in the works, was found to have a number of small flaws in the left leading tyre. The type of defect is representative of a considerable proportion of those found in tyres, and warrants this example being described in some detail. The history of the tyre with particulars of the maker and cast was obtained from the shop records, and showed that it had run a total of 232,000 miles, 64,750 of which had been covered since the tyre was last re-turned. The original diameter on the tread was 5 ft. 3 in. and the thickness 3 in. This had been reduced to 1½ in. at the time the flaws were discovered (¾ in. above scrapping thickness).

The wheel centre was of the cast steel type with cast-in balance weight. There were sixteen spokes, all in good condition, and the tyre was stud-fastened to the wheel centre by eight studs inserted midway between spokes as indicated in the drawing reproduced above. Examination revealed eleven fatigue flaws visible on the flange face. The positions of these flaws in relation to studs and balance weight are shown in the drawing.

In every case the flaw originated at the bore surface of the tyre and developed into the tyre along a curve inclining in the direction of forward rotation of the wheel. The tyre was expanded off the wheel centre, and the shrinkage stresses in the tyre and wheel rim were measured by means of gauge lengths scribed on their faces by a diamond-pointed trammel, before and after removal of the tyre. The stress in the tyre averaged about 7 tons per sq. in., tension and that in the rim of the wheel centre about 5 tons per sq. in., compression. A piece about 3 in. long was cut from the tyre for the estimation of internal stress. The free ends of the hoop closed in 1½ in., corresponding to an internal tensile stress at the bore of 4.5 tons per sq. in.

The roundness of the wheel centre was measured by

	Yield point, tons per sq. in.	Breaking strength, tons per sq. in.	Elonga- tion, per cent.	Reduction of area, per cent.
Defective tyre ... ..	32.4	57.8	20.5	41.8
Acceptance test of cast ... ..	—	58.5	18.0	38.0
Specification ... ..	—	56-62	10-8	—

The chemical analysis of the defective tyre was in very close agreement with the analysis of the cast taken at the makers. The percentage results were:—

	Carbon	Silicon	Manganese	Sulphur	Phosphorus
Defective tyre ... ..	0.73	0.25	0.79	0.043	0.038
Analysis of cast ... ..	0.74	0.24	0.78	0.040	0.038
Specification, not more than ... ..	—	—	—	0.050	0.050

Sections of tyre from the regions of spokes 10 and 14 each showed a small fan-shaped sulphide segregation spreading from the bore at about 1½ in. from the flange side of the tyre. A microscopic examination had as its chief result the association of fatigue cracks with the tool marks on the bore surface, a feature which was also observed in fatigue tests carried out on specimens from the tyre bore. A considerable amount of non-metallic matter was observed in the steel.

As a preliminary to the preparation of fatigue test pieces, a hardness survey was made on a cross-section of the tyre. This showed the section to be reasonably uniform, the hardness ( $H_D = 50$ ) only varying from about 255 in the middle of the section to about 270 near the edges. Specimens for reversed bending fatigue tests were cut from the tyre bore from the positions indicated in the accompanying drawing. The bore surface was in each case subjected to an initial tensile stress of 9 tons per sq. in., which is an average value obtaining in service, and the reversed stresses were superimposed on this. Specimens taken from the region behind the balance weight gave an estimated fatigue range of  $9 \pm 11.8$  to  $\pm 11.9$  tons per sq. in. It is worth recording that one of the specimens, taken from the flange side of the tyre bore, broke after only comparatively few reversals, through a very small fatigue flaw which had developed while the tyre was in service. It is unusual for a fatigue flaw to be found in that part of the tyre which is adjacent to the central parts of a cast-in balance weight.

## NEW WORKS AT AMSTERDAM

*The Netherlands Railways have recently completed important improvements, including the elimination of level crossings and the provision of two new stations*

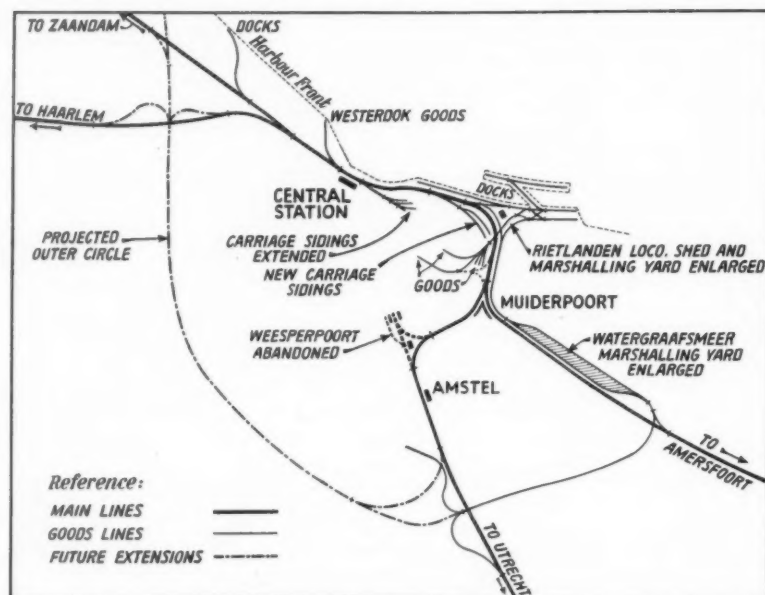
**A**N important part of the largest engineering works carried out by the Netherlands Railways in recent years was brought to a successful conclusion on October 15, 1939, and comprises the modernisation and re-arrangement of the lines approaching Amsterdam from Amersfoort and Utrecht. Traffic on the former is steam or diesel operated, and on the latter, except for through international and other long-distance expresses, electrically

the 1914-19 war, the Holland Railway Company operated from its Central station the Haarlem, Zaandam, and Amersfoort main lines, to the west, north and east respectively. The State Railways Company worked the Utrecht main line from its Weesperpoort terminus, and also exercised running powers into the Central station, the trains reversing at Weesperpoort and using the connection with Muiderpoort junction on the Amersfoort line. Muiderpoort passenger station was, however,

served only by the Holland Railway. This mode of operation was continued after the amalgamation, but certain express trains on the Utrecht line ran direct into the Central station, avoiding Weesperpoort by means of a loop previously used only by goods trains.

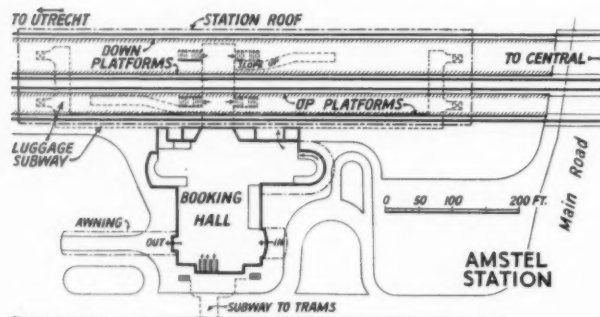
The first stage in the revised 1901 plans, carried out in the years 1921 to 1923, was the extension of the Central station, the doubling of its accommodation, and the quadrupling of the exit to the west, giving separate double track approaches from Haarlem and Zaandam. The works now completed were based on the long-overdue raising of all lines and approaches in the east and south of the city above street level to eliminate the numerous level crossings. This involved: (a) the construction of 21 new underbridges, the majority with great spans and considerable width; (b) the abandonment of Weesperpoort station; (c) the construction of a new station at Amstel south of the city where housing is being extended rapidly; and (d) the complete rebuilding of Muiderpoort station to serve both Utrecht and Amersfoort lines. In view of the

involved road interests, the Government and the Amsterdam municipality agreed to share the total costs with the railway company, claiming in return active participation in the design and execution of parts of the project.

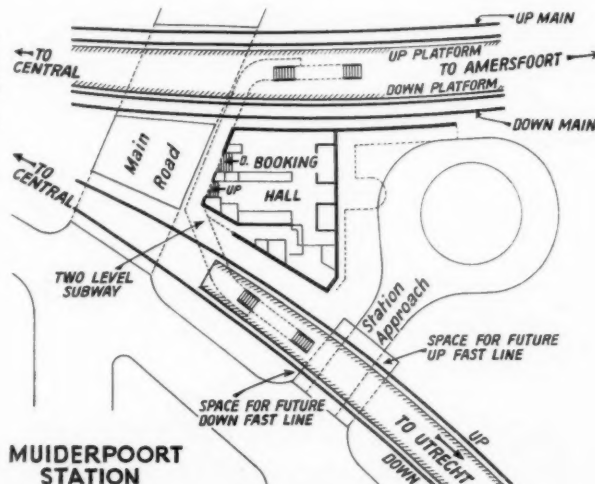


Sketch map of the Amsterdam suburban area showing the abandoned Weesperpoort terminus and the new and proposed lines

worked. The works form the second stage in extensive railway improvements at Amsterdam, planned as far back as 1901, and constantly revised and brought up to date ever since. In pre-amalgamation days, up to the end of



Sketch plans of the two new suburban stations; (above) Amstel, and (right) Muiderpoort. Note the spacious layouts. As departure traffic at Amstel is mainly towards Utrecht, the down platform is 55 ft. wide, whereas the up platform measures only 34 ft.



*The new Muiderpoort station at Amsterdam in the fork between the lines to Amersfoort and Utrecht, with a diesel train at the platform on the former line, and showing the overhead electric conductors on the latter*

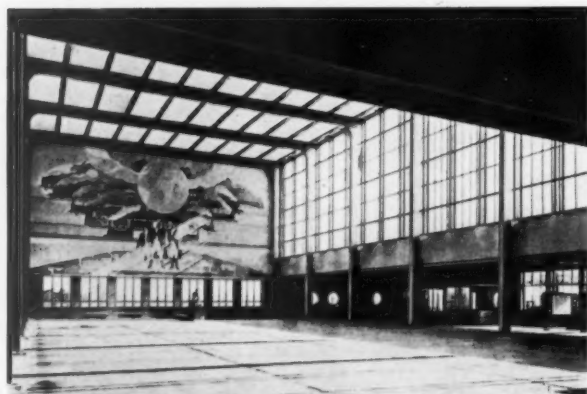


*The new Amstel station at Amsterdam on the line to Utrecht*





*Down side Amersfoort line island platform, Muiderpoort*



*Spacious, glazed, and decorative circulating area at Amstel*

Besides these, the new works carried out to rationalise operation were as follow:—

- (i) Centralisation of the previous State Railway locomotive depot at Weesperpoort and the Holland Railway depot at Rietlanden in an enlarged and modernised depot at the latter place.
- (ii) Centralisation of goods marshalling in an enlarged yard at Watergraafsmeer.
- (iii) Construction of separate double-track passenger lines for the Amersfoort and Utrecht lines from Muiderpoort junction to the Central station, and additional goods lines over part of the distance.
- (iv) Extension of carriage sidings at the Central station, and provision of new carriage sidings alongside the main line between the Central station and Muiderpoort junction.
- (v) Centralisation and enlargement of the local goods stations in the east.

Provision has also been made for the future construction of a circle line round the south of the city, connecting the Amersfoort and Utrecht lines with the Haarlem and Zaandam lines as well as the projected docks extension in the west.

The new stations at Muiderpoort and Amstel have been designed by the railway company's architect, Mr. H. G. J. Schelling. The station buildings of the former are at street level, in the angle between the two converging lines, facing a roundabout approach from the main streets. The special feature of the station is the complete segregation of incoming and outgoing passengers, including the provision of separate subways, one above the other, leading to the platforms. The Amstel

station has been designed with extremely generous dimensions, the booking hall measuring 105 ft. by 215 ft. The station has three levels; a passenger subway, level with the booking hall and street, gives access by way of steps and slopes to the two high-level platforms. The lowest level is occupied mainly by a bicycle park, but there are also two subways at this level, one for luggage, connected by slopes with the platforms on one side and the booking hall at the other end, and another leading to the city trams. Waiting and refreshment rooms at both stations are on the platforms, and the accommodation generally is thoroughly up to date, light and spacious almost to the point of extravagance.

The total cost of the works when finally completed will be about fl. 28,000,000 (approximately £4,000,000 at the present rate of exchange), divided between the Netherlands Railways (fl. 10,000,000) and the State and Municipality (each fl. 9,000,000).

### Large Roller Bearings of Special Design

THE exceptionally large tapered-roller bearing illustrated herewith is one of four recently manufactured by British Timken Limited, Birmingham, for application to large lathes built by Craven Bros. (Manchester) Ltd. for the boring of hollow tubes. In spite of the very considerable dimensions of the bearing, viz. 6 ft. 9½ in. by 5 ft. 7 in. by 5½ in., and the relatively light section of the components, it is manufactured to such limits of accuracy that the outer race revolves on the inner race to within a few thousandths of an inch. This fact provides eloquent testimony to the high standing of British craftsmanship.

The highly specialised plant required for the manufacture of tapered-roller bearings of these large sizes was installed in the British Timken works at Birmingham in anticipation of a demand for this class of product.



## THE FIRST MOBILE RAILWAY WORKSHOP TRAIN

*Recently completed by the Southern Railway for  
use with the B.E.F. in France*

A MOBILE railway workshop train, the first of its kind and the predecessor of a number to be provided, has, as stated on page 423 of March 22 issue, just been completed by the Southern Railway for the Ministry of Supply for use with the B.E.F. in France. The vehicles were placed on view at Waterloo station on Tuesday of last week, March 19, and were inspected by Major-General G. S. Szlumper, Director-General of Transportation & Movements, War Office, and Mr. R. A. Riddles, Director of Transportation Equipment, Ministry of Supply, also by railway officers and representatives of the press.

These mobile railway workshops, of which we reproduce a drawing and other illustrations, will enable service repairs to be carried out on sites in forward areas, instead of at Base depots which may be many miles away, thus reducing to the minimum the time vital equipment is out of commission. Each workshop unit consists of three Southern Railway covered vans modified to suit the requirements of the French railways, and containing power plant, machine tools, and stores respectively; end doors in the vans provide inter-communication throughout, whilst living quarters for the personnel will be added on arrival of the units overseas. The power plant, which is housed in a 17-ft. 6-in. van, consists of a diesel engine direct coupled to an alternator mounted on a combined bedplate resting on wood bearers and rubber packing, and secured by bolts to the underframe of the vehicle. A main fuel tank inter-connected with two auxiliary tanks gives a total fuel storage capacity of 228 gal., and a semi-rotary pump with flexible oil-resisting rubber hose is provided to replenish the storage tanks from supply drums.

### Power Plant Details

The diesel engine is of the 4-cylinder vertical type running at 1,000 r.p.m., arranged for hand starting and fitted with fan-cooled radiator and water circulating system. A storage tank of 25 gal. capacity is installed for cooling water make-up purposes and connections are made in the water pipe system to provide heating in the workshop van when required. The alternator is direct coupled to the engine and the set is designed for a continuous output of 25 kW (31·25 kVA at 0·8 power factor) the stator windings being arranged series parallel to give a 220/440 volt, 3-phase, 50-cycle supply. The exciter mounted above the alternator is wound for 50 volts, and of sufficient capacity to provide an additional 30 amperes for battery charging.

A 12-cell battery of 250 amp.-hr. capacity at the 10-hr. rate is accommodated under the van for general lighting at 24 volts, and a single-phase transformer is installed to give a lighting supply, through a changeover switch, direct from the mains when the set is running. Provision is made for taking an external supply through the cable jumper sockets when the unit is located at a Base depot or when a local supply is available. The electrical equipment is 220-volt, 3-phase, 50-cycle to suit standard French practice, but all motors are supplied with the stator windings mesh-star connected suitable for running in star at 400 volts if required, whilst the starters are provided with additional spare coils suitable for the higher voltage standard in this country. A lifting beam is provided in

the roof with travelling runner for a 1-ton pulley block for maintenance purposes.

### Workshop Machinery Equipment

The workshop proper is arranged in a 32-ft. van modified to enable the whole of both sides to be hinged up in sections, thus giving a clear working space and providing an awning for shelter at either one or both sides of the van as required by weather conditions. The machine tools accommodated in this van have been carefully selected to deal with the various types of repairs necessary and comprise one each of the following independently motor driven machines: 8½-in. centre self-acting, sliding, surfacing, and screw-cutting gap lathe; 18-in. stroke shaping machine; 2-in. pillar drilling machine; tool and twist drill grinder; a ½-in. sensitive bench type drilling machine; and a 6-in. capacity hack-saw.

In addition, the workshop contains hand-operated plant comprising a screwing machine with a capacity up to 3-in. pipe and 1½-in. bolts; a 20-ton hydraulic press for bushing and general work; and three jib cranes, each of 1-ton capacity, for lifting and swinging heavy articles into the workshop. A further item of equipment is an electrically-driven forge.

Plug points are provided for the motor-driven field forge and portable electric tools, all of which are provided with sufficient lengths of flexible cable for working in the vicinity of the workshop. In addition to general lighting and plug points for hand lamps, adjustable lighting fittings are carried from the roof over each machine tool.

The stores van is 17 ft. 6 in. long and suitably arranged with shelves for tools and equipment, the stores consisting of oxy-acetylene cutting and welding equipment and gas cylinders, smith's hearth, hydraulic jacks, oil containers, Tilley lamps, ladder, and other accessories necessary to deal with all emergency repairs.

The Ministry of Supply is responsible for supplying the B.E.F. in France with locomotives, rolling stock, and permanent way materials. The Ministry has placed orders for engines, goods wagons, permanent way equipment, and various mechanical handling plants to a total value of nearly £10,000,000.

The plant and machinery comprising the equipment of the mobile workshop train was supplied by the following firms:—

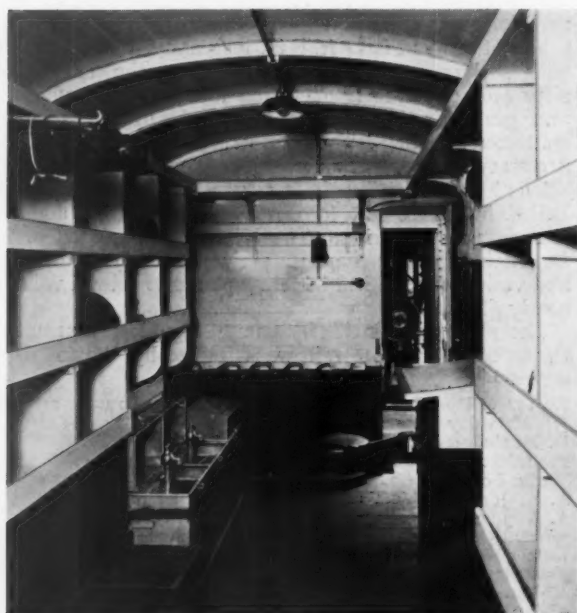
Ruston & Hornsby Limited: 25 kW diesel alternator set with Maudslay alternator.  
D. Mitchell & Co. Ltd.: 8½ in. centre lathe.  
B. Elliott & Co. Ltd.: 18 in. stroke shaping machine.  
Fredk. Pollard & Co. Ltd.: ½ in. sensitive drill.  
A. A. Jones & Shipman Limited: 2 in. pillar drill.  
A. A. Jones & Shipman Limited: Tool and twist drill grinder.  
Edward G. Herbert Limited: Sawing machine.  
Joshua Heap & Co. Ltd.: Bolt and pipe screwing machine.  
Youngs (Lifting Appliances) Limited: 20-ton hydraulic press.  
Alldays & Onions Limited: Smith's hearth.  
Alldays & Onions Limited: Field forge and anvil.  
Black & Decker Co. Ltd.: Portable electric drills.

The electrical gear comprising motors and starters was supplied by the following firms:—

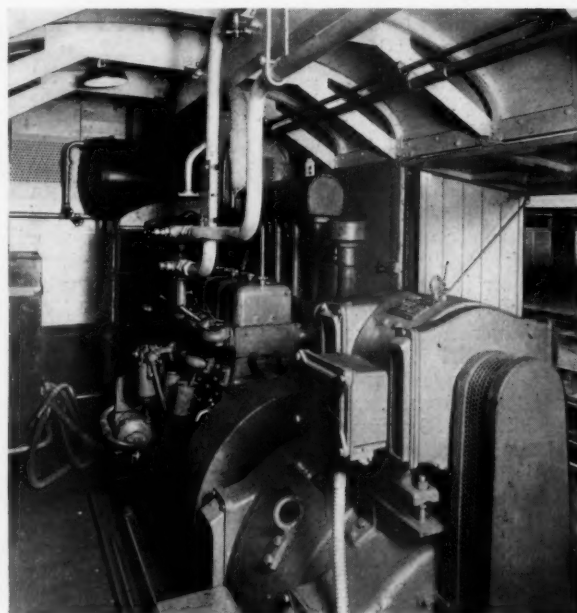
Metropolitan-Vickers Electrical Co. Ltd.; Igranic Electric Co. Ltd.; British Thomson-Houston Co. Ltd.; Allen West & Co. Ltd.; English Electric Co. Ltd.; Crompton Parkinson Limited; Foster Engineering Co. Ltd.



*General view of workshop section with hinged sides lifted ; this van contains a small crane, lathe, screwing machine, and power hack-saw*



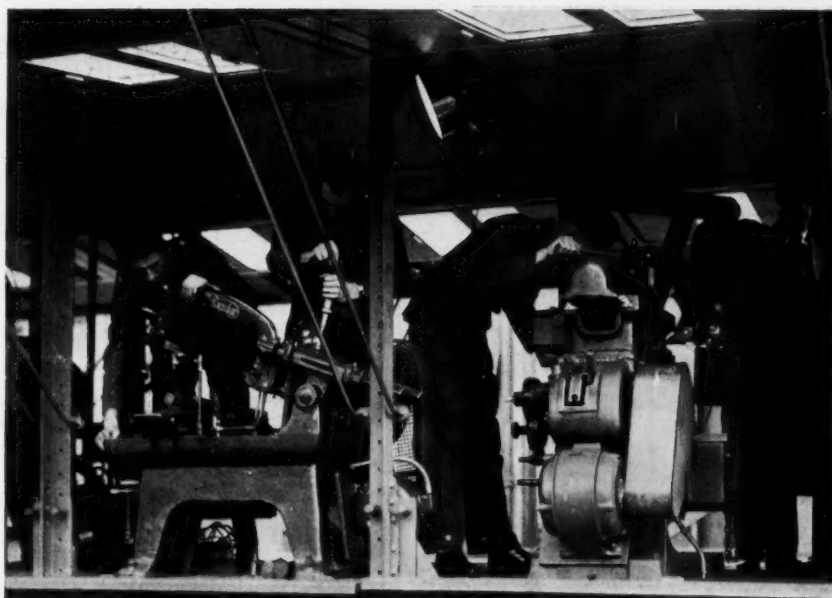
*Interior of one of the end vans showing the shelves and bins for machine tool spares, gas cylinders, and miscellaneous spares*



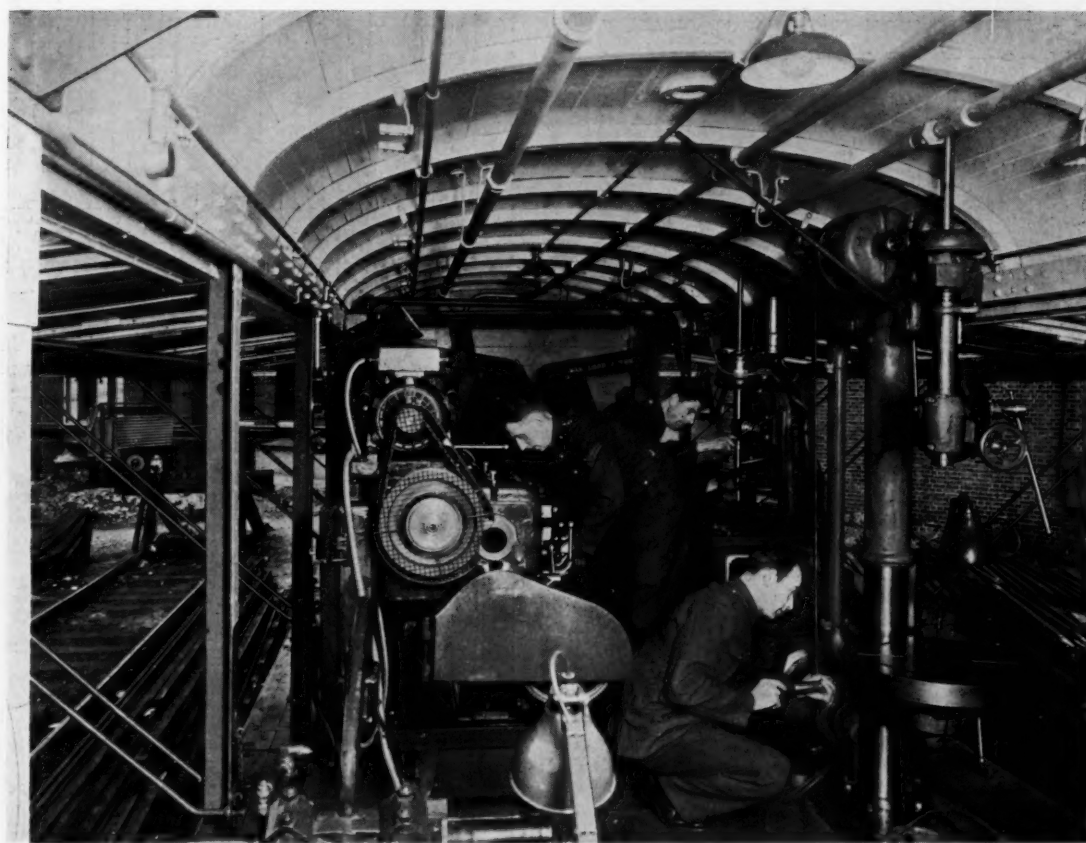
*Diesel generating plant comprising a Ruston engine and a 31½-kVA three-phase alternator ; the plant is housed in one of the end vans*

THE FIRST MOBILE RAILWAY





*Soldiers at work on the power hack-saw and 18-in. shaper in the centre van of the mobile workshop train*



*Machining work under way on the 8 1/2-in. lathe and the vertical drilling machine*

**WORKSHOP TRAIN** (See article on page 463)



General view of mobile workshop train with doors and sides open

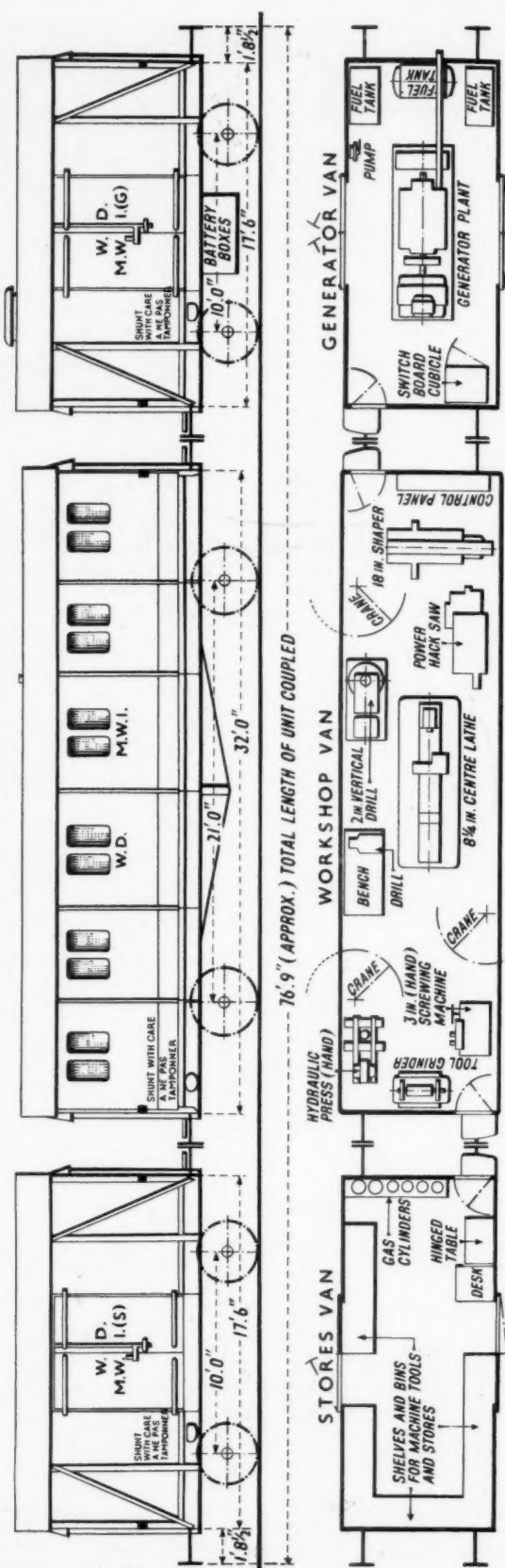


Diagram of mobile workshop unit for use overseas  
(See article on page 463)

## RAILWAY NEWS SECTION

### PERSONAL

Sir Thomas Royden, Bt., C.H., and Sir Robert A. Burrows have been appointed Deputy-Chairmen of the London Midland & Scottish Railway Company in succession to Mr. Edward Brocklehurst Fielden, who retired at the annual general meeting of the company, held on March 15.

#### MR. E. J. MISSENDEN'S NEW APPOINTMENTS

Mr. E. J. Missenden, O.B.E., General Manager of the Southern Railway, has been appointed a Director of the following companies, in place of Mr. Gilbert S. Szlumper, C.B.E., who resigned these directorships when appointed Director-General of Transportation & Movements, at the War Office: Carter Paterson & Co., Hay's Wharf Cartage Co. Ltd., Pickfords Limited, Chaplins Limited, Norman E. Box Limited, Garlick Burrell & Edwards Limited.

Mr. John R. Gillman has resumed his post as General Manager of the Great Southern of Spain Railway.

Mr. S. P. Barraclough, Secretary of the British Chamber of Commerce for Spain in Madrid, has left for Spain, and the temporary office of the chamber, opened in London during the civil war, has now been closed.

#### EGYPTIAN STATE RAILWAYS ADMINISTRATION

The following appointments have recently been made:—

Khalil Bey Fahmy, Assistant General Manager, has been appointed Chief Engineer, Way & Works, in succession to Mahmoud Tewfik Ahmed Bey, who, as announced in our issue of January 26, has been appointed Under Secretary of State for Communications.

El-Sayed Bey Gawdat, B.Sc., Controller of the Department of Industry in the Ministry of Commerce & Industry, has been appointed Assistant General Manager, Egyptian State Railways, in place of Khalil Bey Fahmy.

Mohamed Kamal El Khishin Bey, Secretary General, Egyptian State Railways, has been transferred to the Ministry of Commerce & Industry.

Abdel Aziz Bey Mohamed, Ministry of Public Works, has been appointed Secretary General of the Egyptian State Railways, in succession to Mohamed Kamal El Khishin Bey.

Ahmed Eff. Fahmy, Signal Superintendent, is now on leave prior to retirement, having reached the age limit.

Mr. Frederick Mills, who, as announced in our issue of March 8, has been appointed Chief Mechanical Engineer of the Western Australian Government Railways from June 1, received his technical education at Elswick Institute and Rutherford Technical College, Newcastle-on-Tyne. He served his apprenticeship with R. & W. Hawthorn, Leslie & Co. Ltd., of New-



**Mr. Frederick Mills**

Appointed Chief Mechanical Engineer, Western Australian Government Railways

castle-on-Tyne and was selected for two years' training in the drawing office. During the war of 1914-1919 Mr. Mills joined the R.A.F. and served as an engine instructor for two years. On his discharge he joined the staff of Sir W. G. Armstrong Whitworth & Co. Ltd. where he was leading draughtsman for six years. In 1926 he was appointed Locomotive Designing Draughtsman of the Western Australian Government Railways and became Chief Draughtsman in November, 1931. In 1938 Mr. Mills was awarded first prize in the "Railway Locomotives" section of the James F. Lincoln Arc Welding Foundation, for his paper on the design of a completely welded plate frame for a steam locomotive. Mr. Mills is Secretary, W. Australia branch of the Institution of Locomotive Engineers.

Mr. R. D. Roberts, Dock Superintendent, London Midland & Scottish Railway, has been appointed a Member of the Upper Mersey Navigation Commission, to fill the vacancy created through the death of Sir Edwin Stockton.

#### INDIAN RAILWAY STAFF CHANGES

Colonel C. F. Carson, General Manager of the N.W.R., has been granted leave preparatory to retirement as from July next.

Mr. A. C. Griffin, Secretary to the Railway Board, has been appointed to officiate as General Manager in succession to Colonel Carson.

Dr. E. Haworth has been appointed to officiate as Chief Medical & Health Officer, N.W.R., *vice* Dr. J. Cairns, deceased.

Mr. H. M. Walker has been appointed to officiate as Deputy Chief Mechanical Engineer, N.W.R.

Mr. J. T. Day, Deputy Traffic Manager, G.I.P.R., has been permitted to retire from the service.

Rai Bahadur R. P. Varma has been confirmed as a Divisional Superintendent, N.W.R.

We regret to record the death on March 8, at the age of 63, of Mr. W. A. Buyers, V.D., F.R.G.S., a former Deputy Chief Engineer, East Indian Railway, and sometime Senior Government Inspector of Railways in India.

Dr. James Cairns, late Chief Medical & Health Officer, North Western Railway (India), whose death we recorded in our issue of December 29, left personal estate valued at £23,692.

M. Ernest Béguin, Vice-President of the Administrative Board (Conseil d'Administration) of the Swiss Federal Railways, has been appointed President of the board as successor to M. H. Walther, who is retiring for reasons of health. M. Béguin is a member of the Conseil des Etats (Upper Chamber) and of the Conseil d'Etat of Canton Neuchâtel.

Mr. Ian R. Frazer, who, as announced in our issue of March 8, has been appointed District Engineer, Inverness, L.M.S.R., took a Civil Engineering degree at Edinburgh University. He entered the service of the Caledonian Railway in January, 1914, under the late Mr. Dugald McLellan, at that time District Engineer. Mr. Frazer served with the Forces from 1915 to 1920 both



with the 52nd Division and on the Palestine Military Railway. He was demobilised with the rank of captain, and returned to the railway. In 1923 he went to the Divisional Engineer's Office, Glasgow, London Midland & Scottish Railway, in the New Works Department, and in 1926 to the South Western District, as Senior Assistant Engineer. After a year's work on job analysis, he was appointed Assistant to District Engineer, Derby (South), in March, 1934, and in September of last year became Acting District Engineer. Mr. Frazer is an Associate Member of the Institution of Civil Engineers and for the past four years has been Chairman of the Notts & Derby Section of the Permanent Way Institution.

Mr. K. P. Walker, who, as announced in our issue of March 8, has been appointed District Goods & Dock

*Right: Maj.-General Gilbert S. Szlumper, Director-General of Transportation and Movements, War Office, and Mr. R. A. Riddles, Director of Transportation Equipment, Ministry of Supply, inspecting the first mobile railway workshop train at Waterloo station on March 20, prior to its dispatch for service with the B.E.F. in France (see article on page 463)*



**Mr. Ian R. Frazer, B.Sc.**  
Appointed District Engineer, Inverness,  
L.M.S.R.



**Mr. K. P. Walker**  
Appointed District Goods & Dock Manager,  
Middlesbrough



**Mr. P. W. S. Bygate**  
Acting District Goods Manager, Middlesbrough,  
L.N.E.R.



Manager, Middlesbrough, London & North Eastern Railway, was educated at Dover College, and entered the service of the North Eastern Railway in March, 1909. He served until 1915 under the District Superintendent at Middlesbrough and for nearly a year in the Rates Office of the Chief Goods Manager. In 1913 Mr. Walker was Assistant Inspector at the Hartlepoons, later was second staff clerk in the General Superintendent's Office, York, and subsequently Chief Clerk, Outdoor Section, in the same office. During the 1914-1919 war he served, as a Lieutenant, with the Docks Directorate under the Director-General of Transportation in France. From May, 1920, Mr. Walker was engaged on special

*Left: Inspection of coal shipping operations during a visit of Their Majesties the King and Queen to Cardiff Docks on February 9. On the King's right is Mr. W. J. Thomas, Chief Docks Manager, G.W.R., and on the left of the Queen is Vice-Admiral Tomkinson*

work in the Staff Section of the General Manager's Office, York, and in December of that year he was transferred to Sunderland as Acting Assistant to the District Superintendent. In August, 1921, he returned to the General Manager's Staff Section, and in February, 1922, became Assistant District Goods & Dock Manager at West Hartlepool. In July, 1924, he was appointed Dock Superintendent, Middlesbrough, and in May, 1925, was transferred to Hull as Acting Assistant District Goods Manager. He was made Assistant District Goods Manager at Newcastle in September, 1926, and in December, 1927, became Acting District Goods & Dock Manager, West Hartlepool. In March, 1928, Mr. Walker transferred to York as Assistant to the Superintendent (Staff), North Eastern Area, and in October, 1934, was appointed District Goods & Dock Manager at West Hartlepool.

Mr. P. W. S. Bygate, who, as recorded in our issue of March 8, has retired from the position of Acting District Goods Manager, Middlesbrough, North-Eastern Area, L.N.E.R., began his career in the Secretary's office, North Eastern Railway, at York. He also served in the General Manager's office and the Goods Manager's office, subsequently becoming Head of the Staff Section in the latter office. Mr. Bygate was appointed Assistant to the District Goods Manager, Middlesbrough, in 1916, and later became Assistant District Goods Manager. Mr. Bygate's retirement terminates a family connection with the Stockton & Darlington Railway and the North Eastern Railway which goes back to 1861. His father, Mr. W. Bygate, was Assistant to the Secretary, N.E.R., York, and his brother, Mr. T. H. Bygate, was District Engineer, Darlington.

Mr. Francis S. Scott-Smith, formerly Managing Director of Samuel Fox & Co. Ltd., Stocksbridge, who died recently, has left estate valued at £85,532 (net £77,555).

We regret to record the death on March 7 of Mr. Charles Frederick Spencer, Chairman of the Leeds Fireclay Co. Ltd. Mr. Spencer was also Chairman of Coal Conversions Limited, to which the Leeds Fireclay Company transferred its interest in the British rights of the Plassmann process of low-temperature carbonisation of coal. He was Chairman of the Edison Swan Electric Co. Ltd. and was on the board of John Brown & Co. Ltd., Thomas Firth & John Brown Limited, and Associated Electrical Industries Limited.

Consequent on the recent death of Swiss Federal Councillor Giuseppe Motta and the election to the Federal Council of Signor Enrico Celio in his place, the former Chief of the Swiss Department of Post Office & Railways, M. Pilet-Golaz, is taking over the Political Department (formerly under Signor

Motta), and Signor Celio will succeed him at the head of the Post Office & Railways Department. The new Federal Councillor, who was born in 1889 at Ambri (Canton Ticino), was a National Councillor for some years, and has gained a wide experience of public affairs as lawyer, editor, and member of the Canton Ticino Government.

The Herbert Jackson Prize of the L.M.S.R. for 1939 has been awarded to Mr. H. I. Andrews, of the Engineering Section, Research Department, Derby, for his paper, entitled "The Development of a Refrigerating Machine for use on Trains."

#### G.W.R. APPOINTMENTS

The following appointments have been approved by the directors to take effect from March 4 :—

Mr. R. A. Sims, Assistant District Goods Manager, Bristol, to be Claims & Salvage Agent, Chief Goods Manager's Office, Paddington.

Mr. H. Bolton, Goods Agent, Bristol, to be Assistant District Goods Manager, Bristol.

Mr. C. H. Adey, Assistant Goods Agent, Paddington, to be Goods Agent, Bristol.

Mr. H. H. Starr, Chief Clerk, District Goods Manager's Office, Birmingham, to be Assistant Goods Agent, Paddington Goods.

#### CANADIAN PACIFIC RAILWAY STAFF CHANGES IN THE U.S.A.

The company announces the following changes effective from March 1 :—

Cincinnati territory to be placed under the jurisdiction of Mr. M. E. Malone, General Agent, Passenger Department, Detroit.

Mr. L. P. Dooley, to be City Passenger Agent, Cincinnati.

Mr. A. C. Nieman, to be Travelling Passenger Agent, Indianapolis, *vice* Mr. D. W. Allan transferred.

Mr. A. D. Macdonald to be General Agent, Passenger Department, Los Angeles, Cal., *vice* Mr. H. A. Lee transferred.

#### CANADIAN NATIONAL RAILWAYS APPOINTMENTS IN THE U.S.A.

Mr. C. E. Jenney has retired after 45 years' service in the passenger department of the Canadian National Railways, the past 19 years of which have been spent as General Agent in New York City.

Mr. G. L. Bryson, recently District Passenger & Freight Agent at Washington, D.C., has been promoted to the position of General Agent, Passenger Department, New York. Mr. A. P. Lait, formerly City Passenger Agent at New York, succeeds Mr. Bryson at Washington. Mr. Bryson entered railway service as a ticket clerk in Chicago on May 7, 1912, and subsequently became Chief Clerk at Detroit in 1914, and Travelling Passenger Agent at Kansas City in 1916. After serving for a time in the U.S. Navy he returned to railway service in Detroit and later at Chicago, Cincinnati, and Philadelphia. He was

appointed District Passenger Agent at Washington in 1927.

Mr. A. P. Lait's first service with the company was in the operating department at Winnipeg on August 9, 1912. Subsequently he served in the Engineering Department and transferred to the Passenger Department as a ticket clerk in 1915. After duty with the Canadian Expeditionary Forces in the war of 1914-1919, he re-entered the ticket office in Winnipeg, went to New York as Ticket Clerk in 1925, and became City Passenger Agent there in 1938.

Mr. Thomas Moll has been elected a Director of the Grand Union Canal Company, to fill the vacancy caused by the retirement of Mr. C. K. Tatham in 1937.

Mr. Arthur Hurst, whose death we recorded in our issue of February 9, has left property valued at £118,622 (net £103,597). Mr. Hurst was Signal Engineer of the North Eastern Railway from 1899 to 1914.

Sir Edward John Holland, whose death we recorded in our issue of January 5, has left property valued at £46,042 (net £43,475). Sir Edward was a member of the London Passenger Transport Board from 1933 to 1939.

Mr. Robert Cameron, who has been Acting Traffic Manager of the Buenos Ayres & Pacific Railway since July 1, 1938, has been confirmed in the position of Traffic Manager of the railway, as from January 1, 1940.

#### THE INSTITUTION OF LOCOMOTIVE ENGINEERS

The following elections were made at the annual general meeting on March 13 :—

##### Members

William Coltman, Chief Mechanical Engineer, Assam - Bengal Railway, Pahartali, Chittagong, Bengal.

Sedat Etker, Chief Mechanical Engineer, Turkish State Railways, Ankara.

Douglas Wilfrid Hadfield, District Loco. Supt., Burma Railways, Mandalay.

Benjamin Herbert Mayes, Carriage Works Manager, B.B. & C.I.R., Bombay.

##### Associate Members

Edwin Alfred Bingle, Asst. Engineer, Department of Railways, New South Wales, Wynyard, Sydney.

Kenneth Chandu Lall, Organisation Officer, North Western Railway, Headquarters Office, Lahore.

Chu Chun Lin, Locomotive Dept., Kowloon-Canton Railway (British Section), Hum Hong, Kowloon, Hong Kong.

M. Rashid Zaman, Personal Assistant to Supt., Mechanical Workshops, North Western Railway, Lahore.

#### Transfer of Re-instated Graduate to Associate Membership

Walter Raymond Lawrence, until recently Inspector of Material; now applying for commission in H.M. Forces.

## TRANSPORT SERVICES AND THE WAR—31

### *Balloon barrage trains—Passenger service reductions to facilitate coal transport in Great Britain and France—Internal air lines—The Hindenburg dam railway—The railways of Finland and the peace treaty*

It has been emphasised time and again during the past six months that the present conflict is in many respects a continuation of that of 1914-19, adopting methods then found effective, and different chiefly in the improved methods of transport developed during the past two decades. Many persons seem to think, however, that two innovations of the current war are leaflet-dropping and the adoption of the protective balloon barrage. Nevertheless, both had their counterparts, but on a smaller scale, twenty-five years ago. Leaflet-dropping was then, in fact, a well tried propaganda method. An R.F.C. veteran, now an R.A.F. Volunteer Reserve Officer, attached to a Fighter Command Station in the North of England, has a copy of a pamphlet which was dropped on German troops as early as May, 1916. It is an interesting four-page document bearing the title *Kriegsblätter* (War News) surmounted by the old Imperial German Eagle. The purpose of the *Kriegsblätter* was to give the Germans the news not readily distributable inside Germany, and, among other quotations from newspapers was an extract from *Vorwärts* of May 17, 1916, relating to food struggles outside shops in Dresden. On the back page of this issue of the *Kriegsblätter* was reproduced a pre-war German newspaper cartoon, headed "Consolation for Hunger." It showed two men sitting at a table on which there was a small quantity of bread, and, before one of the men, a beer tankard. On the wall behind them were 22 photographs of crowned heads. One of the men was shown saying: "Yes, it is true, we are the richest people in the world. We support 22 Princes."

The idea of the balloon barrage was evolved as early as 1914-15, when the Germans tried something of the kind, but nothing really practical was done until March, 1917, when the Germans used balloon barrages to protect industrial areas. Their method was found to be costly and not entirely effective, but the German balloons remained in use until the end of the war. During the last war Venice, also, was protected by a similar barrage, and in June, 1917, a British officer was sent to Venice to inspect the equipment and report on it. The Italians had their balloons attached to rafts, hitched to cables and winches. Every moonlight night, at dusk, the balloons were towed to their positions, roughly 200 ft. apart, encircling Venice. They flew at about 10,000 ft. and had cables attached to them to harass enemy aircraft. London first saw a balloon barrage in September, 1917. The "balloon apron," as it was then called, consisted of steel cables suspended from lines held in the air by captive balloons at a height of some 8,000 ft. The object of this apron was to compel air raiders to keep above that height and so be forced to fly in the zone of the patrol levels of defending aircraft—9,000, 10,000, and 11,000 ft. Then, as now, searchlights and anti-aircraft guns formed part of the barrage.

#### Servicing the London Balloon Barrage

Special trains loaded with gas cylinders are now run regularly from various R.A.F. depots to the London suburbs to provide for the needs of the protective balloon barrage over the Metropolis. These little-known wartime trains, which are vacuum braked throughout and run at express freight train speeds, consist of 40 12-ton wagons with hinged low sides and ends, and a complete train is some 900 ft. long. Every wagon carries a road trailer holding 30 to 36 cylinders of gas. Special loading methods have been devised, whereby five wagons at a time are placed in a dock siding and interconnected by loading boards. These enable a tractor hauling four trailer loads of gas cylinders to run straight on to the wagons. After detaching a trailer on each, the tractor is returned to the dock. Railway loaders and R.A.F. staff fasten the trailers to the wagons, and the train is ready for

despatch. At the unloading point a tractor takes each trailer separately off its railway vehicle, travelling to and fro over loading boards and empty wagons.

#### Free Import of Railway Material

The Treasury has issued the Import Duties (Exemptions) (No. 1) Order, 1940, which adds to the free list the following iron and steel goods:—

- 1.—Railway and tramway construction material of the following descriptions: sleepers, tie rods, tie bars, fish plates, sole plates, and continuous joint plates.
- 2.—Bolts, whether threaded or not, bolt ends, set screws and screw studs, and other screws for metal, and nuts, whether tapped or not (including washers assembled with any of those articles).
- 3.—Coach screws.
- 4.—Rivets (other than bifurcated rivets manufactured from wire and tubular rivets with open ends) and washers.
- 5.—Wire netting, wire fencing and wire mesh, of all kinds (including woven wire).
- 6.—Nails (including hobnails and boot and shoe studs and spikes), tacks and staples (other than insulated staples).
- 7.—Jack chain (including mattress chain) and mattress hooks.
- 8.—Parts of railway and tramway rolling stock, being products of iron or steel of the following descriptions: wheels, tyres, axles, and buffers.

The Treasury has also issued the Additional Import Duties (No. 2) Order, 1940, and the Additional Import Duties (No. 3) Order, 1940, which are consequential upon the Import Duties (Exemptions) (No. 1) Order, 1940. The Orders came into operation on March 18, and are published by H.M. Stationery Office as S.R. & O. 1940 Nos. 352, 353, and 354.

#### L.N.E.R. Train Service Reductions

The curtailments and consequential alterations of passenger train services brought into operation by the L.N.E.R. on Monday, February 26, primarily in order to facilitate the movement of coal, proved to be extensive. On the main line from King's Cross the principal suspensions are of the express trains at 7.25 a.m. to Leeds, 10.10 a.m. to Newcastle, 3.5 p.m. to Peterborough and Boston, and 10.30 p.m. to Leeds and Newcastle, with the semi-fast services at 8.15 and 10.45 a.m. to Doncaster and York, and the 6.10 p.m. to Peterborough. In the reverse direction balancing withdrawals are the 10.45 a.m. from Newcastle, 3 p.m. from Leeds, and 10.5 and 11.20 p.m. from Newcastle to King's Cross, with various semi-fast and slow services. In order to compensate in some measure for these cancellations, the 10 a.m. (Flying Scotsman) calls additionally at Peterborough, Doncaster, and Darlington, and reaches Edinburgh at 6.54 instead of 6.25 p.m.; the 10.20 a.m. to Leeds (starting at 10.10 a.m.) at Newark and Retford; the 1 p.m. at Doncaster (Edinburgh is reached at 9.55 instead of 9.45 p.m.); and the 10.15 p.m. to Edinburgh makes numerous additional stops, arriving in Edinburgh at 8.18 instead of 7.15 a.m. To group down express trains more closely together, and so to provide additional main-line paths, the 5 p.m. Newcastle, 5.45 p.m. Leeds, and 5.55 p.m. Hull expresses from King's Cross leave at 5.25, 5.35, and 5.40 p.m. respectively. The up Flying Scotsman calls additionally at Doncaster and Peterborough and arrives at 6.56 instead of 6.35 p.m., immediately preceded by the 12.10 p.m. from Harrogate (12.55 p.m. from Leeds), which starts an hour later and reaches King's Cross at 6.46 p.m. Similarly the 4.45 p.m. from Leeds and 1.20 p.m. from Edinburgh are brought together south of Doncaster, the former running 30 min. later and the latter 15 min. earlier, so reaching King's Cross at 9.50 and 10 p.m. respectively. The 10.15 a.m. from Leeds to King's Cross calls additionally at Grantham, and arrives at 2.45 instead of 2.35 p.m. Both morning and afternoon through expresses between the Eastern Counties, Doncaster, and York are suspended between March and York in each direction. North of York, apart from the cancellations already mentioned, the 9.26 a.m., 4.30, 6.25



and 8.10 p.m. from York to Newcastle are cancelled; the Edinburgh and Glasgow connection of the 9.26 a.m. is provided from York by the 8.45 a.m. semi-fast as far as Newcastle. Coming up the 3.30 p.m. and 8.12 p.m. from Newcastle to York are withdrawn, the 4 p.m. express from Glasgow thus no longer having any connection to York or Leeds. The 10 a.m. from Newcastle to Manchester and Liverpool runs via Harrogate instead of via York; the 4.45 a.m. express from Leeds to Newcastle via Harrogate, Stockton and West Hartlepool, and the 7.57 a.m. from Stockton to York and Leeds, are discontinued. In the North Eastern Area, in addition to the main-line cancellations, there are but few subsidiary and branch lines from which trains have not been withdrawn. Alterations in Scotland are mainly in the times of connections to and from the London expresses; on the Great Northern Section the principal withdrawals, other than on the main line, are in East Lincolnshire, the 9.15 and 10.40 a.m. from Peterborough to Grimsby and the 11.45 a.m. and 5.15 p.m. from Grimsby to Peterborough, being suspended. Very few changes have been made on the Great Central Section, and practically none on the Great Eastern Section. The reductions of service are still in force, and the 38-page pamphlet in which they are set out announces that they will operate "until further notice."

#### L.M.S.R. Train Service Changes

From the beginning of April a passenger train service is to be restored between Sheffield and Halifax by the Royston and Thornhill line, originally built by the Midland Railway, in order to give direct connection with the Lancashire & Yorkshire system. A train will leave Halifax at 7.15 a.m. for Sheffield, reaching there at 8.41 a.m., and connecting with the 9 a.m. express to St. Pancras; in the reverse direction a train will leave Sheffield at 5.5 p.m., in connection with the 12 noon from St. Pancras, and reach Halifax at 6.53 p.m. On Saturdays additional services will run at 12.20 p.m. from Halifax, due Sheffield at 1.44 p.m., and at 9.35 a.m. from Sheffield, due Halifax at 11.5 a.m. Among other April alterations, the 5.30 p.m. express from Manchester to Euston is to call at Crewe, and reach Euston at 9.25, instead of 9.20 p.m.; the fastest time between London and Manchester is thus increased to 3 hr. 55 min., and the longest daily L.M.S.R. non-stop run (previously Stockport to Euston, 183.0 miles, made by this express) will now be the 176.9 miles from Euston to Wilmslow of the 5.40 p.m. from Euston. Restaurant car facilities are to be given on Sundays on the 10.20 a.m. from Perth to Inverness and the 3.50 p.m. from Inverness to Perth. Various detail alterations are made to local services all over the system, including the running of a number of additional trains.

#### Granton—Burntisland Ferry Service Suspended

The L.N.E.R. ferry service between Granton and Burntisland, across the Firth of Forth, was suspended on March 20. This famous ferry was established on September 15, 1844, under the Burntisland & Granton Pier & Ferry Road Act of 1842, which required the proprietors to maintain a sufficient ferry service for passengers and goods "unless prevented by tempestuous weather or unavoidable cause." Under the Edinburgh & Northern Railway (Burntisland Pier & Ferry) Act, 1847, the rights and obligations were vested in the Edinburgh & Northern Railway, and from that time the ferry has been railway owned. It passed by amalgamation to the North British Railway in 1862, and thus at grouping to the L.N.E.R., which therefore is bound by Act of Parliament to maintain it. From 1849 until the opening of the Forth Bridge in 1890, a railway wagon ferry was maintained on the route. The first real break in the continuity of the ferry resulted from the Admiralty requirements of the war of 1914-19, when the service was suspended from December 30, 1916, until the middle of 1919. The *William Muir*, the 1879-built vessel then on the route, was chartered by the Admiralty from June, 1917, to May, 1919, as a minesweeper with Sheerness as her base. After the war, the *William Muir* resumed work on the Granton—Burntisland ferry, and was withdrawn as recently as March 2, 1937. In replacement, the L.N.E.R. secured *The Snowdrop* (a passenger-carrying Mersey ferry, built in 1910, and used between Liverpool and New Brighton), and renamed her *The Thane of Fife*.

#### Internal Air Transport

The considerable prominence which has been given in the daily press to the curtailment of the activities of many air transport companies, has been notable for the frequent suggestions of undue preference by the Government for railway associates. In point of fact, Government spokesmen have made it clear that the discrimination is solely in favour of those air lines which are operating on routes of national importance, involving the crossing of water with no alternative land transport. The fact that railway associates benefit by this distinction is a tribute to the policy they have consistently pursued of regarding air transport as part of a co-ordinated system of transport, and thus avoiding the establishment of purely competitive air services which in wartime are regarded as redundant.

As we recorded briefly in our March 1 issue (page 322), a group of independent non-railway-associated air transport companies in Great Britain, hitherto in the National Air Communications scheme, were informed that the scheme was being wound up as from March 1 and their aircraft taken over by the Government. The eleven companies in this group were as follow: Air Dispatch Limited, Air Taxis Limited, Allied Airways (Gandar Dower) Limited, Birkett Air Service Limited, British-American Air Services Limited, North Eastern Airways Limited, Personal Airways Limited, Portsmouth, Southsea & Isle of Wight Aviation Limited, Surrey Flying Services Limited, Western Airways (Norman Edgar) Limited, and Wrightways Limited. Some of these were private hire businesses only.

The six companies in the so-called railway group (although not all railway associated) which are being permitted to continue operations are: Air Commerce Limited, Great Western & Southern Air Lines Limited, Isle of Man Air Services Limited, Olley Air Service Limited, Railway Air Services Limited, and Scottish Airways Limited. Jersey Airways Limited is not in either group but is considered as being in the second group as it is a railway associate and will continue to operate. In addition, Allied Airways (Gandar Dower) Limited—in the "independent" group—is being allowed to continue its services from Aberdeen. The internal commercial and passenger air services at present working are:

#### GREAT WESTERN & SOUTHERN AIR LINES LIMITED

##### 1. Penzance—Scilly Isles

#### SCOTTISH AIRWAYS LIMITED

1. Glasgow—Campbeltown—Islay
2. Inverness—Wick—Kirkwall
3. Inverness—Wick—Kirkwall—Sumburgh (Shetland)
4. Kirkwall—Sanday—Stronsay—North Ronaldsay (Orkney)

#### ALLIED AIRWAYS (GANDAR DOWER) LIMITED

1. Aberdeen—Wick—Thurso—Stromness—Kirkwall
2. Aberdeen—Wick—Thurso—Stromness—Kirkwall—Sumburgh
3. Kirkwall—Thurso—Stromness—Kirkwall

#### ISLE OF MAN AIR SERVICES LIMITED

1. Liverpool—Ronaldsway (Isle of Man)—Belfast
2. Liverpool—Ronaldsway (Isle of Man)

#### JERSEY AIRWAYS LIMITED

1. Shoreham—Guernsey—Jersey
2. Shoreham—Jersey
3. Guernsey—Alderney

There are thus thirteen regular internal airlines, covering places as far afield as the North of Scotland, Belfast, and the Channel Islands. The Belfast service began on March 4. A British service to Dublin is in prospect; already the Eireann company, Aer Lingus Teoranta, maintains a Dublin—Liverpool service.

Two of the "independent" operators (North Eastern Airways and Birkett Air Service) received instructions on March 10 from the civil aviation department of the Air Ministry to have their 12 aircraft at a specified north-western Airport on March 12 for inspection and impressment, and were allotted special routes along which anti-aircraft crews had been warned of the time and height of the flights. Other companies were given dates a few days later. The total of aircraft affected is understood to be 83. Many of the staffs of the companies are being given the opportunity of serving in the R.A.F.

Two forms of protest were made, one on general principles, and the other on the special merits of the Bristol Channel activities of Western Airways. In connection with the latter it was pointed out in the House of Commons by the Member for Swansea East that, for reasons connected with the war, the steamer service from Swansea across the Channel to

Devon would be discontinued this summer, thus giving an added reason for the continuance of the air service for the benefit of business men and the holiday amenities of the Devonshire coast. The Air Minister has given no hope, however, that he will approve the Swansea—Barnstaple summer service (established in 1939), or even the regular Cardiff—Weston route.

The "general principles" protest eventually succeeded in securing an interview with Sir Kingsley Wood, the Secretary of State for Air, who, with Captain Balfour, the Under-Secretary, and Sir Francis Sheldermine, the Director-General of Civil Aviation, on March 15 received representatives of the independent air line operators. The deputation comprised Mr. F. C. R. Jaques, Mr. L. M. Haybittel, Colonel Strange, and Mr. L. T. H. Greig. Sir Kingsley Wood said he had given careful consideration to the memorandum and statements put forward by the deputation. He was obliged, however, to have regard to the wider considerations of the war effort and the best use of our resources of aircraft and personnel. In view of military requirements, immediate and future, and in particular of the responsibility of the Air Ministry to the army for providing aircraft for army co-operation work, it was imperative that much of the work that had so far been carried out by the civil companies should in future be performed by the Air Force itself. For this purpose large and increasing numbers of aircraft were required, amongst which were those civil types which had hitherto been engaged under civil contracts to carry out the task. The Air Ministry, he said, would pay a fair and reasonable price for the aircraft on the basis of a report made by an independent authority. He felt there should be little difficulty so far as the personnel were concerned in view of the need of the R.A.F. for technical and skilled personnel, and the considerable requirements of the aircraft industry.

As to the suggestion that aircraft were being requisitioned in a manner that showed favour to the companies associated with the railways, Sir Kingsley Wood said that this was not so. It was possible to justify the retention of internal air lines in war only where some national interest was involved, and this principle was being interpreted broadly as applying to routes crossing water with no alternative means of land transport, such as the lines connecting England with Belfast, certain places in Scotland, and the Channel Islands. The companies which were previously licensed by the licensing authority on these routes had naturally been selected to continue where they had operated in peacetime, and any other basis would be unfair. The companies which were operating those routes were in fact also having more than half their aircraft requisitioned, and were being permitted to retain only the bare minimum necessary for running the selected routes. As regards the future, it was impossible, of course, to pledge future governments, but it was obvious that it was not practicable for the organisations running the selected routes to extend their operations to the routes which would now be discontinued, because they would not have the necessary aircraft, and it was not the Air Ministry's policy to encourage and support any such ideas. If a new licensing authority were to be constituted after the war, it would have to consider the interests of all those persons seeking to provide air travel facilities. In conclusion, Sir Kingsley Wood said that he appreciated the difficulties of the companies concerned, but unhappily the effect of war fell in varying degrees on everyone. Many commercial concerns which had been forced to cease their normal activities had not the advantage of having their major equipment taken over and paid for by the Government, and, moreover, in the case of the air line companies, the financial arrangements that had been made had

safeguarded them so far against any losses since the outbreak of war.

### Empire Air Lines

An achievement of which British civil aviation might well be proud is that, despite the demands and hazards of war, the Empire air services, though curtailed, have been carried on without interruption. As in peacetime, the flying boats have left for their destinations on the other side of the world, and have carried the mail to and from Australia, India, and South Africa. The list of the British Empire air services operating today is as follows:—

*Empire Air Mail Flying Boat Services*  
 Poole—Sydney, Australia  
 Poole—Durban, South Africa  
 Poole—Kisumu, East Africa

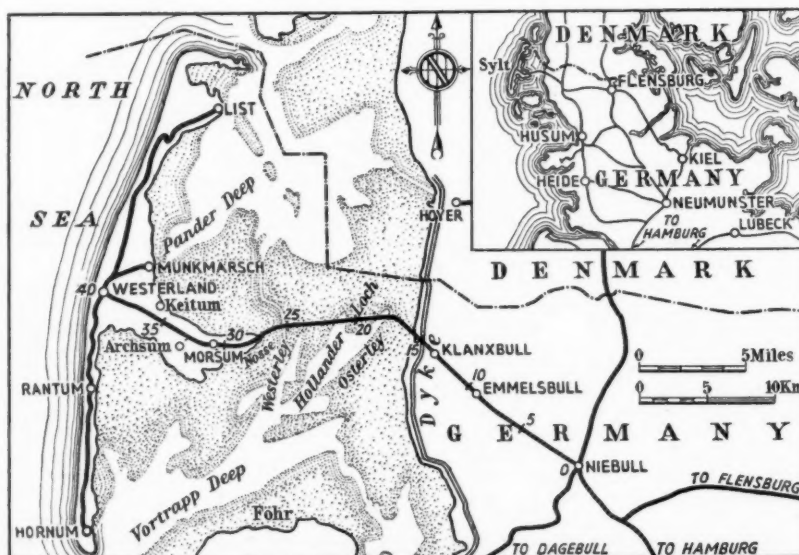
*Landplane Services*  
 Heston—Calcutta  
 Bangkok—Hong Kong  
 Khartoum—Takoradi

The Governments of the United Kingdom, Australia, and New Zealand have agreed to the inauguration of the Trans-Tasman Air Service (on the basis of one service to and from Australia each week) in April when a return flight will be made from Auckland to Sydney by the *Aotea*. The second flying boat for the service will be the *Awarua*.

The Secretary of State for Air has signed an order fixing April 1 as the appointed day upon which the undertakings of Imperial Airways Limited and British Airways Limited are to be transferred to the British Overseas Airways Corporation.

### Sylt and the Hindenburg Dam

Twice this year the island of Sylt, and the Hindenburg dam or causeway which connects it with the mainland, have come prominently into the news by reason of R.A.F. attacks on the German seaplane and naval base there. In peacetime the island of Sylt, off the west coast of Schleswig-Holstein, is a favourite North German seaside resort. Before 1914 the regular means of communication with the island was by a service of light-draught steamers between Hoyer and Munkmarsch, whence there was a light railway to Westerland, the principal town. Tidal difficulties caused the construction of a connecting dam to be considered, and when war was declared in 1914 the route had been chosen and plans prepared. After the war new impetus was given to the project by the alteration in the Dano-German frontier. Germany lost Hoyer and passengers to Sylt thus had to travel through Danish territory and be subjected to passport and Customs formalities. Work on the dam was begun in the spring of



Sketch map showing the island of Sylt and the Hindenburg dam in relation to the German and Danish mainland

1923 after the connecting railway from Niebüll to Klanxbüll (put in hand in 1921) was finished. The train service over the dam was inaugurated on June 1, 1927. The dam itself, named in honour of President Paul von Hindenburg, is 11 km. (6.8 miles) long, and its cost amounted to 18½ million marks, exclusive of the approach lines and associated works. The main foundation was laid by discharging the materials through a pipe line, and the upper part in the usual way with ballast trains. The dam is protected at its base on the south side, where the effects of rough weather are mostly experienced, by a special bank (illustrated in THE RAILWAY GAZETTE of August 10, 1934, page 221). The surface of the dam is 37 ft. 9 in. wide, and carries a single line of standard-gauge railway.

The first R.A.F. raid on Sylt took place on January 10. The dam was reported to have been damaged by direct bomb hits, and a Copenhagen message stated that there was no railway traffic across the dam all that day. On January 11, persons at the Dano-German frontier, from which the dam can easily be seen, observed a train starting from the mainland at 10 a.m. When it had passed along two-thirds of the dam the train stopped, remained there until 3.30 p.m., and then it returned to the mainland. At 4.30 p.m. another train arrived. When it reached the same point on the dam it continued very slowly to the island of Sylt. In the meantime repair work to the dam had been effected. On January 28 to 30, observers on the Danish coast noticed great activity, unusually long trains passing from the island across the dam to the mainland. The conjectured evacuation of the civil population was then apparently confirmed by the announcement of the German Navy High Command that seven islands in the Friesian group had been proclaimed war zones for the duration of the war. These comprise Borkum, Juist, Norderney, Langeroog, Spiekeroog, Sylt, and Wangeroog. The second big R.A.F. raid on Sylt was, of course, that of last week on Hornum, which lasted seven hours during the night of March 19-20.

#### French Railways in Wartime

Some details concerning the operation of French railways during the war were given by M. de Monzie, Minister of Public Works, in the course of a debate in the Chamber of Deputies on March 14. The subject under discussion was the railway accident on January 20 at St. Julien, just beyond Troyes, an important railway centre on the Seine, 103.2 miles south-east of Paris on the Belfort main line. Three railwaymen and seven soldiers on leave were killed in the accident, which, said M. de Monzie, the inquiry had shown was due to the engine driver overrunning four signals. Extending his explanation to the entire system of the French National Railways Company (S.N.C.F.), the Minister laid stress on the very favourable results obtained under war conditions in the last quarter of 1939. In that time there was only one railway accident, against seven in the same period of 1914. French railway working, he claimed, was giving the maximum of safety under the heavy burden of extra traffic due to the war. Despite the special needs of the armies, which called for a large part of the rolling stock, the railways had maintained all the country's transport requirements satisfactorily. He stated that the recent reduction in the number of passenger trains was merely temporary and was due to the coal crisis caused by the severe weather conditions.

Mobilisation of the army had cut down the railway staff by one fifth, but the number of workers had since been increased. On August 31, the railway workers totalled 430,000. On September 1, 91,000 men were called to the army, whereas in 1914 only 37,000 were mobilised. To replace the 91,000, he had called up 25,000 pensioners (now reduced to 12,000), and 18,000 women and young men under the military age. As many of the latter would soon join the colours, he had called up 8,000 Algerians, besides asking that 6,000 soldiers should be returned from the Forces for special railway duties. At present 900 of these men had been sent back to the railways. The Chamber cheered the Minister's tribute to the unflinching devotion of the railwaymen and officials in meeting the hard tasks due to the war. Many were working 60 hours a week, and the drivers and train crews 54 hours.

Large purchases of rolling stock had given France "the finest park of wagons in Europe," continued M. de Monzie. Railway financial conditions had improved and the budget of the S.N.C.F. was now balanced. Co-ordination of road and rail traffic had been achieved. Measures taken to adjust transport tariffs had eliminated railway influence as a factor of the rise in the cost of living. France, under the stress of war conditions, is to follow the British example in economising fuel supplies. Coal will be rationed and coal cards issued. Petrol supplies will be limited and the use of producer-gas motors encouraged.

#### French Express Train Services Resumed

To increase facilities for passenger traffic in the Easter holiday period, some of the express train services recently suspended were resumed from March 15. The resumed services include trains between Paris and Rennes; Le Mans and Nantes; Paris, Bordeaux, and Hendaye (Spanish frontier); Dax and Tarbes; and duplicate trains between Paris and the Riviera. The S.N.C.F. also introduced on March 15 a fast railcar service between Paris and Lille. Leaving Paris at 7.55 p.m. the car reaches Lille at 10.45 p.m. On the return journey, the car leaves Lille at 11 a.m. and arrives in Paris at 1.55 p.m. In both directions it stops at Longueau (for Amiens), Arras, and Douai.

#### The Railways of Finland and the Peace Treaty

The terms of the Russo-Finnish treaty, which was ratified on March 15 by the Finnish Diet by 145 votes to 3, leave no doubt as to the fundamental strategic importance which Russia attaches to the Finnish railway system, and particularly to the Viborg (Viipuri)—Sortavala main line, the value of which we have already pointed out. On March 10 the Russians claimed to have captured Repola, north east of Viborg, on the main railway line to Sortavala, and this claim (if true) may have been an important consideration in the Finnish capitulation. The preamble to the peace terms refers to the Russian desire to assure the safety of Leningrad, Murmansk, and the Murmansk Railway, and the nine points of the agreement are concerned largely with questions of transport. The new State frontiers have been so fixed that the following territories are included in Soviet Russia: the whole of the Karelian Isthmus, with the city of Viborg, and the whole of Viborg Bay with its islands; the territory west and north of Lake Ladoga, including the towns of Käkisalme, Sortavala, and Suojärvi; the territory around Märkäjärvi and Kuolajärvi; and a number of islands in the Gulf of Finland.

The new frontier largely follows that established between Sweden and Russia in 1721 which made Russia a dominant Power for the first time in north-eastern Europe. The present line is described in the Moscow paper *Pravda* as follows: "The frontier begins in the Gulf of Finland approximately 30 miles west of Viborg. It goes more or less straight in a north-easterly direction about 15 miles north of Viborg, and about the same distance north of Sortavala, on the north shore of Lake Ladoga. The main railway line from Viborg to Sortavala, which goes through Antrea, Hiitola, and Elisenvaara is thus now on Russian territory." It is understood, however, that no rolling stock is being transferred from Finland to Russia. The new border meets the old frontier near the Russian town of Poroszero. From here the old frontier remains unchanged almost up to the Arctic Circle, but, in the region of Salla, Russia acquires a strip of land including Kuolajärvi and Märkäjärvi. It is estimated that in all Finland has ceded 15,000 sq. miles, or approximately one-tenth of her total area.

In addition, the Finnish Republic has leased the peninsula of Hanko (Hangö) to Soviet Russia for a period of 30 years from March 23, with the area five miles south and east of Hanko and three miles west and north of Hanko, with all islands situated in this area, against a yearly payment of 8,000,000 Finnish marks. Russia is to establish a military base there.

Soviet Russia is withdrawing her troops from the Petsamo area, which was given to Finland in accordance with the Peace Treaty of 1920, but Russian citizens have obtained the right of free transit through the Petsamo region into Norway



and back, and the establishment of a consulate at Petsamo. Goods from Soviet Russia to Norway, or from Norway to Soviet Russia, being sent through Petsamo are to be free from control and free from any transit duties. Soviet citizens going to Norway or returning from Norway are to have the right of free transit on the basis of their Soviet passports. Soviet non-military aeroplanes obtain the right of free movement over the Petsamo region for the purpose of communication between Soviet Russia and Norway. Concerning the Russian right of free transit through the Petsamo district to Norway, it is reported that no application has been made to Norway yet, and it is not thought that the question will arise in the immediate future.

Finland has agreed to grant a right of way across her territory between Soviet Russia and Sweden by the shortest route, for which purpose a new railway is to be built jointly by the two countries, possibly during 1940, between Kandalaksha and Kemijärvi. The construction of this railway, which would link the Murmansk Railway with the Swedish and Norwegian railway systems, has been referred to by the Russians as a plan to facilitate the transit of goods to and from Norway and Sweden. The Swedish Foreign Minister has stated that Sweden has not been approached in this matter by the Russians. He said in the Riksdag that the Swedes did not even know of this Russian plan, when they transmitted the Russian peace proposals to Helsinki.

The latest news from Moscow says that a Karelian Republic will be set up on the territory gained by Russia. Viborg is to be the capital and the leaders will be prominent Finnish Communists now in Russia. Presumably this will be based on the Karelian puppet government which Russia brought into existence in the early days of the invasion of Finland and claimed to be the sole representative government of Finland. Commenting on the peace negotiations, the *New York Times* said: "First, the full might of Russia for more than three months was unable to crush the resistance of the Finnish armies, and secondly the Kremlin concluded war by coming to terms with the very Government which it had boastfully described as non-existent."

On March 14 Finland mobilised all railway rolling stock, lorries, vans, and drivers in the south-east for the greatest evacuation in her history. It is estimated that 470,000 persons in the Karelian Isthmus and Lake Ladoga region, an eighth of the total population of Finland, lose their land and homes as a result of the treaty with Russia. This figure includes the 80,000 of Viborg. In the south the evacuation of Hanko was begun on March 14, while in the north the Russians began to retire in the Petsamo area. A special section under the Finnish Ministry of the Interior ordered owners of all lorries and trade vans registered in Helsinki to present themselves for transport in war zones. A further order was issued that all persons in Helsinki possessing driving licences must present themselves to await instructions to drive vehicles. As all rolling stock on the southern part of the Finnish State Railways was mobilised, the normal civilian train service almost disappeared during the period of the evacuation. Finally, all farmers on the Finnish side of the new frontier to a depth of 12 miles were asked by Government authority to put all their horses, vehicles, and sledges at the disposal of the evacuation authorities. It is not known how many persons were moved, but the army in the regions concerned is stated to have totalled 200,000. Of the 470,000 civilians, some 100,000



Map of southern and central Finland showing approximate areas ceded to Russia, and proposed new railway linking Kemijärvi and Kandalaksha

(including the 80,000 from Viborg) had moved during the war, and others—very few—have elected to remain under the new Russian rule. The total movement, military and civilian, may therefore be estimated at roundly half a million.

#### Converting Egyptian Locomotives from Coal to Oil

Owing to the war, and the expected difficulty of obtaining large consignments of coal from abroad, it is proposed to convert some 30 coal-burning locomotives of the Egyptian State Railways to burn heavy oil. This is an experiment, but, should it prove successful, it is expected that further conversions will be made.

#### Curtailement of Sleeping and Dining Cars in Egypt

From March 1, the sleeping cars on trains Nos. 33 & 34 between Cairo and Alexandria have been discontinued. From the same date, the sleeping and dining car services on trains Nos. 88 & 89 between Cairo and El Shallal have been reduced in frequency and run three times a week only.

#### Danish Train Ferry Precautions due to Mines

On March 18 ice in the Great Belt and in the Sound detached some mines and one exploded outside Copenhagen. Consequently, the Danish State Railways decided to cancel all their Great Belt night train ferry services. On other than Great Belt ferry routes the railway ferries were being run in pairs so that, if mines damaged one ferry steamer, the other would be at hand to render assistance.

## SOUTHERN RAILWAY COMPANY

*Financial arrangement with Government—Costs and charges—Management changes—Mr. Gilbert Szlumper's appointment—Change in traffic proportions—Extension of electric services—Greater mileage and higher receipts—Loss of continental travel—Wartime business services—Waterloo & City line improvements*

The annual general meeting of the Southern Railway Company was held at Southern House, Cannon Street station, E.C., on March 20, Mr. Robert Holland-Martin, Chairman of the company, presiding.

The Acting-Secretary (Mr. T. E. Brain) read the notice convening the meeting.

The Chairman: My Lords, ladies, and gentlemen, before I proceed to render an account of our stewardship for the past year I shall as usual begin by a reference to changes in the directorate. It is with much regret that we are going to lose by retirement the valuable advice of Lord Clinton. He joined the board of L.S.W.R. in 1907 and since that time, from his knowledge of Devon and the West of England, he has been able to render great service to your railway both on the engineering and estate committee, of which he was for a long time chairman, and on the board. We shall greatly miss his knowledge, his shrewdness and his ability to take wide views. In his place we have been so fortunate as to obtain the services of Mr. Arthur Horace Penn, who is well known in the City and in many spheres of life as a shrewd and far-sighted man of business. We recommend him to you with the greatest confidence as one who will be a valuable addition to your board.

### Agreement with Government

Though most of us who had lived through the four years of the past war thought and hoped when that ended in 1918 that that would be the last great war that would involve the European nations in our lifetime, yet those wishful hopes fortunately did not prevent our statesmen and leaders from making plans for action should war come. Schemes therefore existed for the setting up again of the Railway Executive Committee, but unfortunately it had not been possible in the months previous to the war to come to any agreement with the Government as to the financial terms, though the railways had submitted a scheme to the Government in May, 1938. Therefore, as you know, it was only after protracted negotiations when war had begun that a financial scheme was drawn up and issued by the Government in White Paper Cmd. 6168 on February 7 last. The terms therein set out were approved by the House of Commons and are now in operation as dating from the commencement of the period of control. These terms have been so fully threshed out and commented on in the press and by my colleagues, the three railway chairmen who have already addressed their shareholders, that I do not intend to say much in explanation of them today. More particularly so as they seem to have satisfied our Southern Railway shareholders, for not one of them wrote to expostulate with or congratulate the management on a result that had only been achieved after an immense amount of thought and work on the part of the general managers, solicitors, and accountants of the five railways.

I will therefore only say that we joined with the other main-line railways in opposing the inclusion of the London Passenger Transport Board in the scheme. This proposition, which was made for the first time in November last, was objected to on the ground that as that board was almost entirely concerned with passenger traffics that were bound to diminish in the course of the war it could have no possible rise in goods traffics to counteract this fall, and so would become more and more a liability to the other lines.

We also with the other lines objected to the bringing into the control account of the unknown liability ensuing from the Government's requisition of privately-owned wagons when the terms of compensation and the payments for those wagons had not been definitely settled, yet when the Government made their final and revised offer we were in accord with the other companies that it would be well to accept the terms

subject to definite understandings on certain points. Amongst these were the functions of the Railway Executive Committee and the nature of the control through that committee by the Ministry of Transport. There is, I may say, for many question this, a clear understanding that should the costs of operation either by rises of wages or by increased costs of materials become a serious matter to the companies, full consideration will be given to the demand for a corresponding increase in rates and fares, and machinery will be provided for such adjustments—see paragraph 10 of the White Paper. In my opinion you may look on the agreement as one giving, if not all that a shareholder might reasonably expect, something not unfair either to the State or to the shareholders by whose concurrence and at whose cost the very great improvements which have been made in recent years have been carried out, with such benefit to the State today when the economic and military life of the country depends so largely on the efficiency and rapidity of its transport.

As you will have seen from the report, in March last the Railway Staff National Tribunal decided in the main against claims for improvements in rates of pay and conditions of service submitted by the three railway trade unions, and a claim on behalf of railway shopmen was subsequently rejected by the Industrial Court. Having regard to the improvement in traffic receipts, certain adjustments in wages were agreed by the companies in July last and, as the result of a hearing by the tribunal on renewed claims by the trade unions, further improvements were awarded in October last, including an increase in the minimum rate of pay of adult staff to 50s. in London, 48s. in industrial areas and 47s. per week in rural areas.

Consequent upon the war conditions, applications for general increases were submitted in November last, and the Railway Executive Committee, after consultation with the Minister of Transport, effected a settlement in February this year which provided for increases of 4s. a week to adult conciliation grades and £10 per annum to the salaried grades at salaries not exceeding £350 per annum, with appropriate increases to women and juniors. A settlement was also made at the same time on behalf of the railway shopmen on the basis of a 5s. a week increase to adults. The latter agreements were negotiated under the existing difficult conditions and exemplify the good relationship which exists in our industry between the managements and the trade unions who represent the staff.

### Changes in Management

I must here draw your attention to the changes in the management that have been brought by the war. The war had hardly started when your railway was asked for the second time in its history to lend its General Manager to the Government for the duration of the war. The Minister of Transport, in making the request, was so good as to ask me whether, if we were to lend Mr. Szlumper to the Government, the Southern Railway would be able to carry on with its customary efficiency, to which I replied at once that though we should miss Mr. Szlumper greatly I was convinced that he was the right man for the post, and that he, as was our habit on the Southern, had always been careful to train on his successors, so that we had in our then Traffic Manager, Mr. E. J. Missenden, one who with his experience at Southampton Docks was fully capable of taking on the General Managership till Mr. Szlumper's return, and in Mr. J. B. Elliot an Assistant General Manager of tried experience.

Therefore for the time being we have loaned Mr. Szlumper to the Ministry of Transport and the War Office, where he has been appointed to the post of Director-General of Transportation & Movements and is now a Major-General.

We are proud indeed that once again the General Manager

of the Southern Railway has been selected for so important a wartime post, which, with his knowledge, training, and contact with the French railway officials, he can fill so well, and we congratulate him as well as ourselves on this public recognition of his ability. In his place, as I have said, we have put Mr. E. J. Missenden, in whose wisdom and experience we have the utmost confidence, and are more than satisfied with the way in which he is carrying out his duties. He is very ably backed up by Mr. J. B. Elliot, as Deputy General Manager, and by Mr. R. M. T. Richards, as Traffic Manager. I cannot speak too highly of the work of these officers and of the special work done by Mr. Missenden, Mr. Elliot, our Solicitor Mr. Smedley, and our Accountant Mr. Davidson, the Southern Railway team in the negotiations with the Government.

The war has also caused us the temporary loss of our Secretary, Lt.-Colonel L. F. S. Dawes, who is back at the War Office. In his place we have appointed our Assistant Secretary, Mr. T. E. Brain, to serve as Acting Secretary. We have also lost by retirement after many years of most efficient service to the Southern our Rating Agent, Mr. S. E. Hitchcock, to whose good work in our service we owe much of our success in rating and assessment appeals. We have not filled his place but have amalgamated his department with the Estate Department under our able Surveyor & Estate Agent, Mr. A. Endicott, whose careful supervision of our properties has been most fruitful.

Now let us turn our attention to the report and accounts which you will note are presented in an abbreviated form approved by the Ministry of Transport to meet the peculiar circumstances. I presume that as usual you will wish the accounts to be taken as read and that I may therefore endeavour to give you, as succinctly as possible, an account of the happenings of the past year, pointing out how they have affected your property and what their incidence has been on the traffic and earning powers of our railway and on the welfare and comfort of our passengers and of our staff. It will be necessary for me in these remarks to treat the working of the past year in two distinct parts. The first, the eight months of peace when your railway was working under its normal management. The second, the four first months of war when it was working with the other three main-line railways and the London Passenger Transport Board under the Minister of Transport and the Railway Executive, a committee consisting of the general managers of the railways and the Deputy Chairman of the transport board under the chairmanship of Sir Ralph Wedgwood.

#### Increasingly Difficult Year

From the outset the year proved an increasingly difficult one, and many times have we congratulated ourselves that, acting on the wise advice of Messrs. Baring and our brokers, in January, 1939, we seized the exact moment at which to make our issue of £7,500,000 4 per cent. debenture stock. Had we hesitated the opportunity might have been lost, in which case our financial position, our capital account was then largely overspent, would not in these troublous times be so sound and satisfactory as it is today.

In listening to the story I have to tell you I want you to remember that, unlike the other three main-line railways, the Southern is essentially a passenger as opposed to a goods line. In normal times we used to reckon 75 per cent. of our traffics came from passengers and only 25 per cent. from goods. We have no large manufacturing cities on our system, which owes its success to the far-sighted way in which its general managers have always sought to improve the communications between the dormitory towns and the City and to encourage those who work in the City to spend their holidays in the health towns on the sunny Southern coast or on visits to the Continent. To that far-sightedness is due not only the enormous increase of population that has taken place in South London but also the continual growth of the attractive coast towns which have been placed on the map by ease of access.

To meet that growth and to carry that increasing population we have continued to electrify our lines and to make new ones. On January 1, 1939, we brought into use the lines from Virginia Water to Reading, Ascot to Pirbright junction, and Frimley to Guildford *via* Aldershot. By this electrification we were able to improve the services operated very con-

siderably, increasing by 58 per cent. the mileage worked on this section. Our second scheme for the year, which completed the plans we had given to the public, was the electrification of the lines from Gravesend Central to Maidstone West, Swanley to Gillingham, Strood Junction to Rochester Junction, and Otford Junction to Maidstone East, which were opened by the Minister of Transport on the introduction of the summer train service in last July. By this electrification improved services were operated on two more sections of the line, namely, Charing Cross to Maidstone West, and Victoria to Maidstone East and Gillingham, with a resulting increase of 42.7 per cent. in the train mileage on these sections.

#### Five Years Electrification

During the five years allocated to certain schemes of electrification your railway had electrified 267 route miles—619 track miles—and built 828 electric vehicles at a cost of approximately £8,500,000, making in July last the total number of Southern electrified route miles 709, with 1,760 track miles.

At the same time we proceeded with the making of the Motspur Park to Leatherhead Railway, and on May 28 of last year opened the section (1 mile 67 chains) from Tolworth to Chessington South. In the districts supplied by this line and by the newly electrified lines there was every sign, till the clouds of war began to gather, that building development was again going to follow and even anticipate the railway and bring adequate reward to the shareholders. But the shadow of war darkened our prospects not only there but in other directions.

The Southern is essentially a holiday line, taking holiday makers not only to the south coast resorts but to the Continent, and Hitler's annexation of Czecho-Slovakia in the middle of March immediately had a disastrous effect on our Continental traffic, our railway revenue from which dropped by no less than £100,000 up to the end of August, and in addition our holiday traffic to the south-east coast, particularly to the Kentish resorts, faded away. Then came those fateful days at the end of August and the beginning of September which culminated in the German invasion of Poland and the declaration of war by this country and its ally France, which led to the four main-line railways and the London Passenger Transport Board being taken over as arranged by the Government, but without any definite scheme as to the finance of the plan having been made, despite many discussions having taken place on this subject for more than a year.

This taking over by the Government therefore divides our railway year into two parts; the eight months, January to August, of peace under their accustomed managements, and the four months, September to December, of war under Government control. Though the declaration of war, when it did come, came as a shock to all of us, the preparations for such an event had been in hand for months, with the result that the hard work put in by railway officers and staffs in order to be prepared fully for the contingency of war, should it arise, made this company and the other main-line companies better prepared and better trained for the needs of war than ever before.

On air raid precautions alone all the railway companies had for months been working in close co-operation with the Government and very considerable sums of money had been and were being spent in the protection of vital points and in the provision of emergency stores at the cost of the Government, on the understanding that the railway companies would repay up to 50 per cent. of the amount and at the same time could satisfy the Government that they were carrying out to the full and at their own cost all the "good employer" precautions which were enforced on industry in general. Other and similar precautionary measures had to be put in hand at our docks, and in some of these a proportion is recoverable from the Government or from the users of the docks. As far as the expenditure on "good employer" account is concerned, I need only say that we are giving as much protection as is practicable to our highly trained staff to enable them to carry on their work with the least possible interruption and danger to themselves.

Railways are the main arteries of our national life and it is our care to preserve our line to the uttermost and to keep it always ready to work to the fullest capacity. But, great as were the preparations for defence at home, more still was required of railwaymen. The traffic staffs, in close collabora-



tion with the Government departments concerned, were working overtime on the secret and highly complicated schemes necessary to complete the arrangements for the British Expeditionary Force to be transported to its ports of embarkation, complete with its guns, vehicles (horse and mechanical), ammunition, stores, and all the vast impedimenta of modern war, and, arrived at the ports, ships had to be made ready, loaded, and despatched. I am proud to tell you that the Southern, on whom, from its geographical position, the burden to a very large extent fell, was for a second time able to fulfil its task without a single hitch or mishap, to the complete satisfaction of the Government whose thanks we have received.

#### Division of Traffic

I have told you that in normal days our goods traffic was only 25 per cent. of our traffic receipts. Owing to the war the proportions are growing more nearly to 50/50, which is another reason for the reduction in some of our important passenger services and for the decreased speeds of some of our passenger trains. For this greatly increased goods traffic has largely to be operated in the daytime owing to the difficulties of the blackout. You will be interested to know that in connection with the requirements of the war we have in the six months ended February 29 run no fewer than 6,377 special trains, passenger and freight, and of these over 5,000 were freight.

I cannot, for many reasons, give you details as to the numbers of men and vehicles moved or of the vessels loaded, but I can assure you that when the time comes for the story to be given in full detail it will remain for all time a monument of clever planning, of fine organisation, and of unremitting hard work on the part of all concerned. And I feel certain that you will join with me today in recording our thanks to our officers and men for the part they played in this historic achievement.

Nor was this the only task for which the services of the railway were essential. Since the last war the danger of destruction from the air had grown enormously. With this in view it had been determined that on the declaration of war a vast scheme of evacuation from the overcrowded cities to the lesser populated countryside should be at once put in force. So, in addition to all the movements of troops and stores, there was the additional task laid on your company of evacuating mothers, children, and the infirm. To carry this out the Southern alone ran 1,014 special trains conveying nearly 300,000 evacuees, mostly children. No bombing of towns from the air has yet occurred in this country, but should such happen we, in conjunction with the other railways, are prepared to carry out the further scheme of evacuation that has been arranged, and I have no doubt that our staff will cope with this as efficiently as with the first evacuation.

Now all these movements of troops, stores, and evacuated persons have necessarily led to some discomfort to our regular customers, our passengers, whose comfort we always endeavour to study, though sometimes it seems hard to convince them as to this. Well, what were the facts? For many months before war began it had been generally thought both by the Government and the public should hostilities begin an immediate air attack of the fiercest description would be made on London which would, in addition to the forced evacuation of thousands of sick and infirm and women and children, result in a large number of businesses leaving London and consequently a great diminution of business traffic to and from London. All the plans made for the railways on the outbreak of war had been based on this supposition and on the supposed necessity to keep the lines clear for war and evacuation traffics, and on the outbreak of war our passenger services were cut severely. But what happened then? There were no air raids and our ordinary traffic fell by less than 20 per cent.

#### Restoring Business Services

It was obviously necessary to restore the business services as soon as possible, but under Government control we were not our own masters and the needs of the Government too had to have precedence. With the least possible delay we proceeded to reconstitute our business services as fast and far as we possibly could, for your board and officers fully realise that next to the requirements of the Government

should come the convenience and comfort of our customers whose goodwill we all value and endeavour to keep and increase since they look to us for speedy and punctual transportation to and from their homes and offices.

Another source of great irritation to the public was the blackout, which many passengers seemed to think was imposed by the railways just to annoy them. Nothing can be farther from the truth, nor was anything more disliked by the railway men, whose difficulties and dangers in the hours of darkness were thereby much increased. Once more the facts. I have told you that all our preparations against the acts of war centred on protection from air raids. It was therefore obvious that in an air raid the brilliantly lighted train of pre-war days with all its blinds up would be a danger not only to those who travelled by it but also a track guide to anyone in the air. Nor would the danger be greatly relieved if the windows were darkened and the lights left brilliant within, for then when the train stopped at a station every open door would give a brilliant circle of light. Therefore long before the war began the Government had decided not to allow the ordinary reading lights in trains, and after much experimenting a standard of blue lighting was agreed that would not be allowed to be exceeded.

The lamps required for this lighting were on order when war came; large numbers had been delivered, certainly sufficient to have equipped the diminished services in the first few weeks of war had hostilities taken the form expected, but the expected raids not having taken place the restoration of business services made the supply of these lamps insufficient so that, since the white lights were barred, some compartments had to go unlighted. Hence the regretted discomfort which was not the fault of the railways. Now after further experiment a form of lighting, certainly not ideal but one which makes reading possible, has been evolved and is now being brought into use throughout our system. The main-line trains have been fitted first and the suburban ones are now being fitted as rapidly as possible.

#### New Lighting Fitted

The system is not the same in each train, for the wiring in steam and electric trains differs, and it is essential that no spill of light shall be visible when the doors are opened at a station. But if the war is still being fought when autumn nights lengthen you may be assured that all our trains will be fitted. At present out of some 12,000 compartments in main-line steam trains we have equipped 7,000 compartments, and in our main-line electric trains we have equipped all the compartments, some 3,000. Taking the line as a whole, of the 47,000 compartments in our main-line and local trains we have already equipped 17,000. Supplies of lamps have now arrived and the work is proceeding rapidly.

But the problems of interior train lighting were not the only problems. When war began all our stations, except a few key ones, had to be kept in darkness; now by degrees a system of lighting within the now growing Home Office limits is being installed and nearly half our stations have been fitted. Throughout the last few months of war our officers and special travelling observers have spent much time in trying to effect improvements within the limits of the lighting requirements imposed on us and we are constantly endeavouring to help the public by improvements in waiting rooms, on stairways and passage ways and elsewhere.

I have so far spoken only of the inconveniences imposed on the railways and their travellers by the needs of war, but in the last few months we have had to contend with the forces of nature. I refer of course to the almost unprecedented arctic weather conditions with which our staff had to contend a few weeks ago. It is not possible to exaggerate the difficulties and dangers which they had to undergo in carrying out their duties, often in complete darkness, with a temperature on its way down to zero. Many of them carried on when by all reasonable standards they should have been in their doctors' hands. Large numbers eventually did go sick, but I am glad to say the public as a whole were not slow to realise our troubles that all our railways had to contend with, and many of them wrote grateful letters of appreciation of our difficulties and the efforts we were making to overcome them.

Our electric lines suffered one of the most serious hold-ups yet experienced as a result of the rain freezing as it fell on

the conductor rails, causing a thick layer of ice to form over the rails carrying the electric current, a formation which only arises when a certain degree of humidity in the atmosphere and severe frost on the ground occur together. Luckily the phenomenon is rare in this country and seldom extends over a large area. Our Chief Electrical Engineer and his technical staff are studying the problem and have learnt much during the recent frost.

Mr. Ellson, our Chief Engineer, and his staff have therefore had many troubles to contend with owing to the weather of the last few months. What with gales and storms, with snow and ice to an extent unknown in England in recent years, lines have been blocked, telephone poles, their wires weighted with ice have been brought down, points have been frozen up, and worse still, owing to the heavy rainfall in the autumn months, the chalk strata so prevalent in south-east England became so saturated that in places such as the neighbourhood of Coudsdon it became a thick creamy fluid which flowed out and in places covered the rails, too thick to remove by pumping and too thin to lift easily. Then came the frost with its disintegrating effects, and in the thaw that followed hundreds and thousands of tons of chalk fell down, sometimes covering the lines to a depth of many feet. I am glad to say that owing to the care and hard work of our engineers and the permanent war staff and heroic efforts on the part of our traffic staff these obstructions have now all been cleared away, but we much regretted the unavoidable delays and inconveniences caused to our passengers, particularly in the Brighton, Eastbourne, and Dover areas.

Our Chief Mechanical Engineer, Mr. O. V. Bulleid, has had his shops working to capacity throughout the year, not only on our own work but on special war requirements such as the conversion of coaching stock into ambulance trains, one of the first of which Her Majesty the Queen came to inspect at Victoria station with the Ministers of Health and Transport in attendance. We have also constructed travelling workshops for the forces.

#### Waterloo & City Line Stock

So far as war requirements allow we intend to proceed with the introduction of new and improved rolling stock, always aiming at a brighter and more pleasing style of decoration and, of course, the maximum of comfort. In this respect I can tell you that the new carriages for our Waterloo & City Line are built and are now undergoing their trials preparatory to going into service at an early date. I went to inspect them on Monday last and was delighted with my ride in them; they have much greater carrying capacity, are roomy, comfortable, well sprung, run very quietly, and will, I am sure, be appreciated by those who have for so long had to endure the present almost prehistoric ones. They will, we hope, commence running at Whitsuntide. And here I must insert an apology for our not being able owing to the war to start work on the new escalator at the Bank station. We have our Parliamentary powers but cannot proceed while the war lasts.

In our docks and marine departments at Southampton and elsewhere it is impossible to get any true comparison of the working of 1939 with previous years. The first few months' working was not normal owing to the unsettled political outlook, and the moment peace ceased to exist war activities on an unprecedented scale took the place of ordinary commerce and many of the company's ships were requisitioned by the Government. At Southampton many of the great passenger liners were taken off their usual services at the outbreak of war and smaller vessels with other cargoes took their place. This resulted in a decline of 12.5 per cent. in the tonnage as compared with 1938 though there was a slight increase in the number of vessels entering the docks. The total volume of cargo dealt with at the docks was 5 per cent. greater than in 1938, but this was due mainly to the increase of imports being set off by a decline in exports.

In the first eight months of 1939 the Dover-Dunkerque train ferry vessels carried 53,934 passengers, an increase of 729 over the traffic for the same months in 1938, and the cargoes carried in the same period were 62,612 tons, no less than 10,832 tons more than in the similar period of the previous year. Motorcar carrying generally showed a very satisfactory increase. In the first eight months the new motor ferry

vessel *Lymington* carried no fewer than 6,313 motorcars, nearly 3,000 more than in the similar period of 1938. Passenger movements inevitably declined. The total of ocean and cross-Channel passenger figures declined nearly 19 per cent., being 457,013, against 560,426 in 1938. I wish I could tell you more fully of the movements which have taken place at Southampton and our other ports since the war started. It is a thrilling tale but not one that can be revealed in the national interest.

#### Itchen Quays Improved

During the past year, the Itchen quays, which have a total length of 1,600 ft. and comprise berths 34, 35, and 36, have been widened by 38 ft., in order to allow of the depth alongside being increased from 28 ft. to 34 ft. L.W.O.S.T. This has allowed the quays to be remodelled, and to facilitate loading on to the first floor of the transit sheds a reinforced concrete platform 20 ft. wide has been constructed in front of each shed at first floor level. The new passenger steamer *Invicta*, which was built by Messrs. Denny for the Dover-Folkestone Channel service, was launched in December last. She will be the largest ship in the company's fleet and we hope to build others to be ready to cope with the trans-Channel traffic which must eventuate when war ends.

Here, for reasons of State, I must end my history of the docks, but I cannot refrain from telling you that the work carried out by our Docks & Marine Manager, Mr. Biddle, and his able staff has earned the complete approval and praise of both Army and Navy Authorities, whose only complaint at one time was that the Southern Railway traffic department would bring their trains into Southampton too much ahead of time. Certainly on one occasion when I paid a visit to the port on a day that had been set apart for some time as a holiday with the intention of providing a day on which any time lag might be made up, I found no time lag to exist, so that the day was really able to be kept as a holiday by our overworked staff.

Two historic events took place at Southampton last year. On June 22 Their Majesties the King and Queen disembarked at Southampton at the close of their visit to Canada and the United States. And in July, Pan-American Airways inaugurated a passenger service followed on August 5 by Imperial Airways whose airways liner *Caribou* initiated the first regular British mail service. These services ceased when war began, but they ran long enough to show how convenient and pleasant a service it is to leave by train the platform of the Imperial Airways station, under its fine clock tower at the western end of Victoria station, and sleeping comfortably in the hostel at the docks, to start at cockcrow next morning from the air berths in Southampton water.

These are only a few of the happenings in the eight months of peace and the four months of war in the past year, and you will want to know in what way they affected your traffics. Necessarily their effect was a very bad one. The invasion of Czecho-Slovakia in March spoilt our Easter Continental traffic; and in July and August so black was the outlook that all traffic to the Continent fell to nearly zero. In fact our railway receipts for Continental traffic were less by approximately £100,000. Our steamboats were similarly affected and showed a decrease of £28,000. Our seaside traffic, especially in the Margate group of stations, went to pieces and showed a decrease of no less than £39,000.

#### Increased Receipts from Electrification

One bright spot was the result of the first two months' working of the Chatham and Gillingham electrification extension, which showed an increase of 54,000 passengers and £4,000 in receipts, an increase of 8 per cent. In the whole electrified area the volume of traffic was 195,000,000 passenger journeys, bringing in £6,100,000, an increase of 2.3 per cent.

War preparations, too, increased the revenue from goods traffics. The result for the eight months ended on August 31 was an increase in net revenue of £146,000, and if the unsettled conditions in Europe had continued our position at the end of the year would not, I think, have been a happy one. The effect on the railway of the preparations made in case war should come became more marked and of greater

intensity as the year 1939 proceeded till finally war, alas, became unavoidable. For example the collection and delivery of parcels and goods showed an increase in receipts of £83,000 which was mainly owing to the very large number of air raid shelters that have been delivered in the suburban areas and in large towns such as Portsmouth, Southampton, Chatham, etc.

The actual net revenue to be derived from the pool for the four months to the end of December, 1939, will not be ascertainable for some time, for there are many accounting questions that have to be settled between the controlled undertakings and the Government. So in order to close the accounts for 1939 a reasonable and careful estimate was made. This amounted to an aggregate net revenue of just over £13,750,000, of which the Southern Railway share is £2,262,000. With this the net revenue for the year was brought up to £6,743,000 which compares with £5,942,000 for 1938 and £6,552,000 for 1937. That is to say it was £801,000 more than for 1938 and £191,000 more than for 1937.

Last year we reduced our carry forward by £132,000 and there is an increase of £267,000 for interest on the debenture stock raised in 1939, so that the balance available for dividend is £1,876,501, £402,000 in excess of that for 1938. This will enable us to pay 5 per cent. on our preferred ordinary stock, *viz.*, £1,379,330, and  $1\frac{1}{4}$  per cent. on our deferred ordinary stock, *viz.*, £393,628, and to carry forward slightly more, £103,543 against £94,933 brought in, a result which I hope you will not think too bad for a very difficult year.

What, you will ask, of the future? It is impossible to forecast it today. All our strength and energy must be given over to winning the war at the earliest moment possible. But at the same time we must plan forward that we may end the war with our efficiency unimpaired and with our system kept as it is today in close and helpful contact with that public we have so long served. It is our ambition and intention to do this, and with the magnificent staff that we have, whose one aim is to keep the Southern in the forefront of railway service, we cannot but succeed.

I now move that the report of the directors and statement of accounts for the year 1939 be and the same are hereby received and adopted, and I will ask the Deputy Chairman to second that resolution.

Colonel Eric Gore-Browne (Deputy Chairman): I have much pleasure in seconding that resolution.

The Chairman: Before that resolution is put to the meeting, is there anybody present who would like to say anything?

#### Stockholders Remarks

Mr. Ernest Short said he was speaking for the British Railway Stockholders' Union. He was sure that not only the members of the union, but everybody there, would desire to thank the Chairman for the very hard work he must have put into the negotiations with the Government in association with the other three Chairmen. The settlement with the Government did not seem to the stockholders anything but a hard bargain but they could say of it that it was an acceptable bargain—although he thought that was the most that could be said about it. He wanted to emphasise the point, because some grossly unfair remarks had been made in a public paper, and even in the House of Commons, suggesting that by this arrangement an unfair bargain had been made by the railway stockholders. He had in his hand a statement printed in a popular paper to the effect that this deal was a £100,000,000 gift to railway gamblers. That statement had been made in the House of Commons. It was apparently based upon a statement which appeared in several financial papers, of which this particular one was typical. During the past three weeks alone home rails had risen in value by about £100,000,000. The well-informed City Editor who penned this paragraph continued: "Much of this money has gone to speculators who have foreknowledge of the present settlement." He did not think many of the stockholders had come into contact with the men who had put into their pockets any large amount of that imaginary £100,000,000. There was, after 18 months of negotiation, some appreciation, but he hoped none of their

stockholders sold their stock at the ridiculously low levels then ranging. The rise, such as it was, was purely a paper one.

As the Chairman had said, it was all-important to look forward to the future. When the war ended the British railways would be left in a very different situation even from that which they faced at the end of the last war, and he trusted that the board would see that there was no return then of that grossly unfair competition which hampered the railways so much between the years 1921 and 1939. The Square Deal, as Lord Stamp had said at the L.M.S.R. meeting was in cold storage, but they hoped it would be taken out occasionally, so that its vitamin capacity would not be curtailed and it would be there for use when this ugly struggle ended and the Southern Railway was free once more to go ahead into prosperity.

Mr. Instone congratulated the Chairman on his excellent speech, and said it had made them very proud to be stockholders of the company. They were all very pleased with the directors' report, and to see, for a change, that they were having a dividend today on the deferred ordinary shares. As to the question of the settlement with the Government, he did not think that the railways, including the Southern Railway, had had their due for the wonderful work they had done since the start of the war. He would like, on behalf of the stockholders, to congratulate the Hon. Clive Pearson, one of their directors, who had been appointed Chairman of the new Airways Corporation. He thought that appointment was a tribute, not only to the Hon. Clive Pearson himself, but also to the Southern Railway Company.

With reference to the staff, he would like to endorse all that the Chairman had said regarding Major-General Szlumper. It was indeed a great compliment to him to have received such an appointment, but that was also a very great compliment to the company. Regarding the gentleman who had been appointed to take Mr. Szlumper's place during his absence, he (Mr. Instone), as a trader who did a great deal of business with this and other railway companies, happened to know that if ever there was a right man in the right place, with a vast experience and ability, it was Mr. Missenden. The teamwork of the Southern Railway was indeed given proof by the appointments which had been made of the other gentlemen whose names had been mentioned. He was sure that the stockholders would desire to thank the staff, from the highest to the lowest, for their loyal and devoted services to the company, especially during the times through which they were passing. Finally, there was one branch of their people to whom he would especially, as a shipping man himself, wish to convey the stockholders' appreciation, and those people were the company's brave seamen.

Squadron-Leader N. J. Hulbert, speaking principally as a deferred stockholder, said he did not think that there was a single proprietor present who would not desire to congratulate the directors on the result of the year's working. He thought every stockholder realised the good bargain which had been made, or, at any rate, the best bargain that could possibly have been made with the Government. This achievement was in itself no small task and the board's reward probably was in the complete harmony and agreement which everybody present felt about it. The alternative to such an agreement would have been some plan of nationalisation which at this juncture would not have been practical politics. On business grounds the agreement was very satisfactory, because now railways had the opportunity of earning what was, at any rate, a reasonable profit, and, furthermore, from the national point of view it did ensure the maintenance of efficient railway service for national purposes. As a serving officer he saw a great deal of the company's activities, and he would like to say how everyone in the Services who came into contact with the company's officers and the members of the staff had nothing but the greatest praise and admiration for the perfectly magnificent way they carried out their duties, sometimes under almost insuperable difficulties. Furthermore, he could testify from two companies which were big commercial customers of this railway that, despite the burdens which had been placed on its shoulders by the war, the customers had not been neglected. After the last war railways had been up against



the unorganised and immature competition of road traffic, but when this war was over the railways would be up against that competition from a highly skilled and highly organised road industry. Stockholders looked to the board to see that the Square Deal was kept square and that the stockholders would not be the losers. A particularly heavy burden would fall on those directors who were members of either of the Houses of Parliament to ensure that, when post-war legislation was passed, Parliament would take a fair view in regard to the railways. He tendered birthday congratulations to Lord Kennet and congratulated Mr. Missenden on his appointment. They all missed the cheeriness and ability of Major-General Szlumper, but in Mr. Missenden they had a very efficient and worthy successor.

Mr. Mason said that he was sure the stockholders realised the strenuous efforts made by the board during the past year. Several scores of people had suggested to him that there should be a re-arrangement of times of services from London to Brighton. He believed there was not a fast train from 6 o'clock to something after 7 o'clock in the evening. The Square Deal was a most important thing for the future of the railways, and it must be settled before the war ceased. He also urged that instead of appointing new directors help should be given to the general manager, so that assistant general managers could give the whole of their time to their work. He said the board held no fewer than 148 directorships. He also asked whether railway traffic figures for the current period could be published, as otherwise stockholders would get little information until a year hence.

Mr. Greig said that on the Portsmouth trains from early morning until late at night, every hour of the day, there was always a restaurant and kitchen car, and sometimes two, on the trains, and he had seen them go away from Waterloo empty. It could not be necessary to carry all that dead stock about doing nothing. It had occurred to him that there were strong signal lights which, at the beginning of the war, were so brilliant that it was almost possible to read by them in a train which had no other lamp, and the rays from those signal lights projected hundreds of feet, if not yards, from the signals themselves. Those lights had now been subdued a little, but still at Woking there was a brilliant light which must be visible from 20,000 ft. in the air. Could not anything be done to reduce the light given by those signals?

Mr. Leslie Boyce, referring to Mr. Mason's comments on the number of directorships held by the board, said he would like to assure the Chairman that they represented the views of only an infinitesimal minority, and the great majority were extremely grateful for the work done in the past, and were particularly anxious to support the board at the present time when it was striving with such great difficulty and complexity to attain that which all stockholders desired.

Mr. Sutton referred to the safety of British railways. He thought the directors of the Southern Railway, and of all the other railways, were to be congratulated upon the way in which they had carried the public, the troops, and all the rest of it. When one compared that with what had happened on the Continent, and especially in Germany, he thought the result was a really wonderful achievement.

#### The Chairman's Reply

The Chairman: My Lords, ladies, and gentlemen, it would seem that there are no other speakers who would wish to address the meeting this morning, and, therefore, I have now to reply to those who have spoken. I am very grateful to them for their very kind remarks, and to you all for the way in which you have listened to my somewhat long speech. Mr. Short hoped we were going to look after any unfair competition after the war. We certainly have our eyes on that. I did not raise that question in my speech, but we are very well aware of the very large number of mechanical vehicles which have been placed over in France, and we shall do our best to see, when the war ends, that they are not a menace to railways in this country. With regard to what has been said about the Square Deal, I should like to say that, though necessarily hung up at the moment owing to the war, all the negotiations have not been dropped, and the scheme is somewhat more than pigeon-holed. It is being

negotiated, and at the end of the war I hope there will be some real result obtainable by which we, and the road people, can work without doing each other damage.

Then, with regard to what Mr. Instone said, on the whole I think he congratulated us, and I am very grateful to him for his special remarks as to the magnificent behaviour of our seamen, who have had to endure in ships, normally in the safest of traffic across the Channel, the dangers of mines and other terrors of war. The service they have given, and are giving, us is perfectly magnificent, and we all ought to be grateful to them, as indeed we ought to be grateful to all sailors, whatever they are doing. With regard to what Mr. Mason said, I am only too ready to see any shareholder who has any fair grievance which he wishes to bring before us. I think, when it comes to dealing with a shareholder, it is far better to see him than to write letters at long range. With regard to the Brighton service, I will look into that matter and see what can be done in reference to a better service running between 6 and 7 p.m.

#### Work of Directors

Mr. Boyce dealt with Mr. Mason's remarks about the directors. I cannot say more about my co-directors than that they are doing all the work I want them to do; they are working hard and attending all the meetings, and they are most useful to me in their other walks of life. If I were to pick up the people that Mr. Mason hints I should pick up—some sort of superior managers—to look after our management, I do not know what my managers would do, except resign the next day. It would be impossible to run any business on those lines. With regard to what Mr. Greig said in reference to the Portsmouth trains, I might say that we are trying to reduce carrying any surplus stock, wherever it is possible to do so. But it is not quite so easy to do that as he thinks. We have, however, that matter very much in mind, and we will see, so far as possible, that we do not carry any redundant stock. With regard to the question of the light from signals, I may say that all the signal lights, which he said are visible from the air, are fitted with hoods, so that their light is mainly downwards—and in addition to that, they have been passed by the Home Office authorities. They can also be put out at any moment in case of attack. Therefore I do not think they are really a danger.

Now it just remains for me to put the motion, which has been proposed and seconded, to the meeting, that motion being that the report of the directors and statement of accounts for the year 1939 be and the same are hereby received and adopted.

The Resolution was put to the meeting and carried.

The Chairman: The next business of the meeting is the declaration of dividends, and I will ask the Acting Secretary to read the resolution.

Mr. T. E. Brain (the Acting Secretary): The resolution is as follows: that the following dividends be and the same are hereby declared: For the half year to December 31, 1939, 2½ per cent. on the 5 per cent. guaranteed preference stock; 2½ per cent. on the 5 per cent. redeemable guaranteed preference stock (1957); 2½ per cent. on the 5 per cent. preference stock; 2½ per cent. on the 5 per cent. redeemable preference stock (1964); (making in each case, with the interim dividends, 5 per cent. for the whole year); 4 per cent. on the preferred ordinary stock (making, with the interim dividend of 1 per cent., 5 per cent. for the whole year); 1½ per cent. for the whole year on the deferred ordinary stock; and that such dividends be payable (subject to income tax) on March 28, 1940.

The Chairman: I beg to move that resolution.

Colonel Eric Gore-Browne (Deputy Chairman): I beg to second that resolution.

The resolution was put to the meeting and carried.

The Chairman: The next business of the meeting relates to the retiring directors. There are five directors who retire at this meeting, namely, Lord Clinton (and I may say we all very much regret he has decided to retire), Sir Francis Dent, Mr. Mansbridge, the Hon. Clive Pearson, and Lord Rockley. All those gentlemen are eligible, and offer themselves for re-election, with the exception of Lord Clinton, who does not

seek re-election. I therefore move that Sir Francis Dent, Mr. Mansbridge, the Hon. Clive Pearson, and Lord Rockley, be re-elected directors of the company.

Colonel Eric Gore-Browne (Deputy Chairman): I have pleasure in seconding that resolution.

The resolution was put to the meeting and carried.

The Chairman: A further resolution is necessary in connection with the filling of the vacancy on the board of directors caused by the retirement of Lord Clinton, and I therefore move that Mr. Arthur Horace Penn, M.C. (who is fully qualified and whom I have already recommended to you), be and he is hereby elected a director of the company in the place of the Right Hon. Lord Clinton, P.C., G.C.V.O., retired.

Colonel Eric Gore-Browne (Deputy Chairman): I have pleasure in seconding that resolution.

The resolution was put to the meeting and carried.

Major F. W. Butler (a stockholder): I have much pleasure in proposing that Sir William Harry Peat, K.B.E., F.C.A., be and he is hereby elected an auditor of the company.

Mr. W. Bishop (a stockholder): I have pleasure in seconding that resolution. I would only add that Sir William Harry Peat is very well and widely known as a most eminent member of his profession, and he requires no further recommendation. I feel sure the shareholders should have every confidence in his appointment as their auditor. I have pleasure in seconding that resolution.

The resolution was put to the meeting and carried.

The Chairman: That concludes the business of this meeting.

Mr. Boyce: I propose a very hearty vote of thanks be given to the Chairman, the directors, the management, and everybody who has served us so well during the past year.

Another stockholder: I have pleasure in seconding that resolution.

The resolution was put to the meeting and carried, with acclamation.

The Chairman: On behalf of the directors I thank you all very much for the way you have received that vote of thanks. We are all very grateful to you for your support. There is one little remark I should like to make before you disperse. Mr. Mason asked whether it was not possible for us to give figures of the traffics today. I may say that it is not possible to do that, for many Government reasons, and in addition to that, if you got them, they would be of no use to you for comparison purposes. You cannot judge anything from the working of the first two months of the year: everything depends on the course of the war.

## King's Lynn Docks & Railway Company

Sir John Wardlaw-Milne, Chairman of the King's Lynn Docks & Railway Company, who presided at the general meeting of proprietors at the Great Eastern Hotel, Liverpool Street, E.C., on March 19, said that negotiations with the Government on the terms of the financial agreement to cover the period of State control of the undertaking had not yet been concluded. They were, however, in a sufficiently advanced stage to enable the board to make an estimate of the amount which would be received in respect of the period September-December, 1939, and that sum had been included in the accounts. He added that it was likely that the basis adopted would be that applying to the four main-line companies with certain modifications.

## The British Thomson-Houston Co. Ltd.

The ordinary general meeting of the British Thomson-Houston Co. Ltd. was held on March 20 at Crown House, Aldwych, London, W.C.

Mr. William C. Lusk, the Chairman of the company, who presided, said that the profit for the year, after deducting expenses and charges other than interest on debentures and loans, was £1,038,046, compared with £970,644 for the previous year. After deducting interest on debentures and loans £72,480, depreciation £287,087, and provision for taxation £410,000, there was a balance of £268,479, compared with £354,046 for the previous year. The increase in the profit shown in the figure of £1,038,046, was considerably more

than absorbed by the increased provision for taxation. This included N.D.C. and not E.P.T., since the company's profits were not such as to be subject to excess profits tax. To the balance of £268,479 there was added the amount brought forward from the previous year, £182,829, making the total to be dealt with £451,308, as compared with £560,454 for the previous year.

It was proposed to transfer to the general reserve account £100,000, raising it to £700,000. The dividend on the 7 per cent. preference shares, less income tax, amounting to £68,250, had been paid, and the directors had recommended payment of a dividend on the ordinary shares at the rate of 7 per cent. per annum, less income tax, £91,000, leaving £192,058 to be carried forward to the new account.

The company's manufacturing plants, as usual, had been well maintained during the year, and improvements adopted wherever efficiency and productive capacity could be advanced thereby. Capital expenditure on manufacturing equipment and buildings during the year amounted to £342,112, and the directors had written off to depreciation of plant account £287,087, thus continuing their usual policy of introducing improved methods where practicable and of providing liberal plant depreciation. The board was convinced that these methods were necessary to keep plants such as those of the company efficient and capable of meeting the new conditions that constantly arose. Expenditure during the year on A.R.P. for the protection of employees had been particularly heavy, due to the fact that the company had five works in different parts of the country.

The orders received during the year, which constituted a record for the company both in the case of home and export business, included many orders from the Dominions and other overseas markets for its regular products, such as turbo-alternator sets, transformers, switchgear, electric winders, electric rolling-mill equipments, and rectifiers for electric railway work. The blackout had necessitated many changes in forms of illumination, both for street and for factory and other interior lighting, and the company's lighting development department had evolved new methods of lighting to meet these altered conditions. Despite the blackout the orders for the well-known Mazda lamps exceeded the orders of the previous year.

All the engineering and manufacturing resources of the company were now directed solely toward winning the war by meeting the needs of the fighting services and the Ministry of Supply for any of their requirements which it was in a position to manufacture, whether they were regular products of the company or special munitions of war, and the research department was working on many interesting and important problems in close collaboration with the scientific departments of the various Services. At the same time the company was making a special effort through its widespread overseas organisations, and other channels, to increase export business in support of the Government's policy being vigorously pursued by the Export Council established by the President of the Board of Trade. The number of employees at the end of the year was greater than in any previous year, and would have to be increased still further to deal with the work in hand and in immediate prospect.

The report of the directors, and the company's accounts to December 31, 1939, were approved and adopted, and the retiring directors and the auditors were re-elected.

## Forthcoming Meetings

- Mar. 29 (Fri.).—**Zafra & Huelva Railway Company (of Spain)** (General), San Bernado 68, Madrid, at 4 p.m.
- Mar. 30 (Sat.).—**Southport & Cheshire Lines Extension Railway** (Ordinary yearly) Lord Street station, Southport, at 12.30 p.m.
- Apr. 3 (Wed.).—**East Kent Light Railways Company.** (Annual general), Waterloo station, S.E.1, at 12.30 p.m.
- Apr. 4 (Thurs.).—**The Derwent Valley Light Railway Company** (Annual general) 16, Coney Street, York, at 2.30 p.m.
- Apr. 8 (Mon.).—**Mariano & Havana Railway Co. Ltd.** (Annual general), Dashwood House, Old Broad Street, E.C., at noon.
- Apr. 11 (Thurs.).—**Norfolk & Western Railway Company** (Annual), at Roanoke, Virginia, U.S.A., at 10 a.m.
- Apr. 12 (Fri.).—**North Devon & Cornwall Junction Light Railway Company** (Annual general), Central station, Exeter, at 3.15 p.m.

## QUESTIONS IN PARLIAMENT

### Closing Coventry Goods Station

Captain W. F. Strickland (Coventry—C.), on March 13, asked the Minister of Transport what statements he had received from manufacturers that they were unaware of the closing of Coventry goods station against the reception of consignments until they caused enquiry to be made into the reason for non-delivery to their customers.

Mr. R. H. Bernays: My hon. and gallant friend has sent me representations from 7 traders in regard to 21 consignments to Coventry which were delayed during the month of February. In the case of only 7 of the consignments was there any indication that the consignor was not informed of the restriction on acceptance of goods for Coventry.

### Accidents

Sir Henry Morris-Jones (Denbigh—Nat. Lib.) asked the Minister of Transport what was the number of casualties from motor accidents, causing death and non-fatal injuries, respectively, during the six months ended March 3, 1940, with the equivalent numbers for the corresponding period last year; and, in their various categories, accidents caused on railways and any other form of transport ascertainable, with the corresponding figures for the same period last year.

Captain Euan Wallace (Minister of Transport) wrote in reply: The precise information desired by my hon. friend is not available. No figures have been compiled of the numbers of persons injured in road accidents in Great Britain during the past six months or of the number of casualties in which motor vehicles were concerned. The total numbers of persons reported to have died during the two six-monthly periods as a result of road accidents are:—

Sept., 1938, to Feb., 1939	...	...	3,439
Sept., 1939, to Feb., 1940	...	...	5,165

On the railways the numbers of fatalities which have occurred in connection with all movement on rail during the corresponding periods are:—

	Sept., 1938, to Feb., 1939	Sept., 1939, to Feb., 1940 (Provisional)
Passengers ...	34	64
Railway servants ...	111	132
Other persons ...	25	17
Totals ...	170	213

### London Bridge—Bank Tube

Mr. H. Brooke (Lewisham, W.—C.), on March 18, asked the Minister of Transport when the London Transport train service between London Bridge and the Bank was expected to recommence; and whether the work involved was being pressed forward with all possible speed.

Captain Euan Wallace (Minister of Transport) wrote in reply: The protective works which are being carried out at London Bridge and the Bank are proceeding continuously, and it is hoped that, apart from any unforeseen

circumstances, completion will be effected by May 18, when the train service between these stations will be resumed immediately.

[This was recorded at page 269 of THE RAILWAY GAZETTE for February 23 last, when we gave various details of the schedule for carrying out these flood protection works.—ED., R.G.]

### Railwaymen and Food Rationing

Mr. W. Dobbie (Rotherham—Lab.), on March 20, asked the Minister of Food whether he was aware of the discontent among railwaymen employed on double home shifts of duty owing to the difficulties experienced in regard to food rationing; and whether he had now decided what steps to take to remove the grievance.

Mr. A. T. Lennox-Boyd (Parliamentary Secretary to the Ministry of Food): I am aware that complaints have been made, and the matter is still under consideration. I hope that a decision will be arrived at shortly.

### Diversion of Traffic to Rail

Mr. W. A. Burke (Burnley—Lab.), on March 20, asked the Minister of Transport, what action he proposed to take regarding the dissatisfaction among many firms in Burnley with the inadequate petrol supplies for delivery of goods by road; and if he was aware that the policy of instructing firms to send by rail was adding to the difficulties of the railways, who could not supply containers for many classes of goods or cope with the existing traffic.

Captain Euan Wallace (Minister of Transport): As the amount of fuel available for the movement of goods by road is limited, it is necessary, in order that it shall be used to the best advantage in the national interest, to divert to other means of transport a certain amount of traffic normally carried by road. In any case, where the Regional Transport Commissioner is satisfied that reasonable alternative transport facilities are not available for essential traffic, supplementary fuel rations for movement by road will be granted. Restrictions in the supply of petrol are, I regret, bound to cause inconvenience, but I am not aware that there is any special ground for dissatisfaction in Burnley. The number of railway containers available for the country as a whole is limited, but I understand that the present requirements of Burnley firms are being met.

### The Supply of Railway Wagons

Mr. R. De La Bere (Worcester, Evesham—C.), on March 21, asked the Minister of Transport whether the Government would take further steps to ensure that the railway companies who had trucks standing empty in the sidings for many weeks should take further steps to re-organise their methods with a view to ensuring a more speedy turn-round of wagons in

connection with coal supplies throughout the country.

Captain Wallace, in a written reply, stated: The railway companies are fully alive to the need for securing a speedy turn-round of wagons, but accumulations of empties are necessary to enable them promptly to meet the fluctuating demands of coal and other traffic. As a result of the introduction of the demurrage regulations, the railways are now experiencing no difficulty in collecting sufficient empty wagons to meet the requirements of the collieries.

## Staff and Labour Matters

### Workmen's Compensation

Sir John Anderson announced in the House of Commons on March 18 the Government's intention of introducing a temporary scheme for meeting cases of hardship to injured workmen under the existing scale of compensation payments. Legislation is to be introduced to supplement the existing payments by adding allowances in respect of wives and children. A married man in receipt of compensation is to have an extra allowance of 5s. a week in respect of his wife and 3s. a week in respect of each child under 15. There will be proportionately reduced allowances for wives and children where a man is only partly disabled. Compensation payments under the new arrangement will be subject to an overriding maximum of seven-eighths of a man's loss in weekly earnings. There will be no increase in the payments to single men. The Government has taken this step to deal with outstanding cases of hardship pending the report of the Royal Commission on Workmen's Compensation, which is still continuing its inquiry.

## Forthcoming Events

- Mar. 29 (Fri.).—Institute of Transport (Edinburgh), at North British Station Hotel, 6.15 p.m. Annual general meeting.
- Mar. 30 (Sat.).—Permanent Way Institution (Manchester-Liverpool), at Ditton Depot. Inspection of creosoting plant in operation.
- Apr. 2 (Tues.).—Institution of Civil Engineers (Road Engineering), Great George Street, London, S.W.1, 5.30 p.m. "The engineer's part in the promotion of road safety," by Mr. F. A. Rayfield.
- Apr. 3 (Wed.).—Permanent Way Institution (London), at Albert Stanley Inst., Fulham Palace Road, Hammersmith, 7 p.m. "Engineering features of the Liverpool Street to Shenfield electrification scheme," by Mr. T. H. Seaton.
- Apr. 4 (Thurs.).—Railway Club, 57, Fetter Lane, London, E.C.4, 6.15 p.m. "Railway amalgamation before 1921," by Mr. Kenneth Brown.
- Apr. 8 (Mon.).—Institute of Transport (London), at Charing Cross Hotel, 1 for 1.15 p.m. Luncheon. Address by Mr. Frank Pick.
- Apr. 11 (Thurs.).—Diesel Engine Users' Association, at Caxton Hall, Caxton Street, London, S.W.1, 2.30 p.m. 1939 Bulletin.
- Apr. 13 (Sat.).—Institute of Transport (Metropolitan Graduate), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 3 p.m. "Suburban train operation," by Mr. Charles F. Klapper.
- Apr. 23 (Tues.).—London School of Economics, at Canterbury Hall, Cartwright Gardens, W.C.1, 5 p.m. "The problem of railway charges (1)," by Mr. Roger Gibb.



## RAILWAY AND OTHER REPORTS

**Natal-Zululand Railway Limited.**

The directors recommend an interim dividend of 1 per cent. (same) for the year to August 31, 1940.

**Canadian National (West Indies) Steamships Limited.**—An operating profit was secured, despite effects of the war, of \$623,859 in the year 1939, a decrease of \$122,380 compared with the previous year.

**Canadian National Railways.**

The report for the year 1939 shows operating revenues of \$203,820,186, an increase of \$21,578,463 or 11.86 per cent.; operating expenses \$182,965,768, an increase of only \$6,790,456 or 3.85 per cent.; and net operating revenues of \$20,854,418, an increase of \$14,788,007. The operating ratio was 89.77 per cent., the best since 1929, and comparing with 96.67 per cent. in 1938. The net amount available for interest in 1939 is \$10,635,023, against a shortage of \$3,549,048 in 1938, showing an improvement of \$14,218,676.

**East Kent Light Railways Company.**

Net revenue for the year 1939 was £3,362 against £3,121 for 1938; adding £24 brought in makes £3,386. Income tax absorbs £900. The scheme of arrangement sanctioned in November, 1939, provided that all net revenue during five years from January 1, 1939, is to go to payment of interest on 5 per cent. debentures. For 1939 it is proposed to pay 1½ per cent. on debentures. This absorbs £2,222, leaving £264 to be carried forward.

**Clogher Valley Railway (Committee of Management), 1928.**

For the year to September 30, 1939, railway gross receipts were £4,067, compared with £4,304 for the previous year and expenditure was £11,342 (against £11,251) giving a net deficit of £7,275 against a deficit of £6,947. Miscellaneous receipts (net) were £67 as compared with £92 and contributions from Tyrone and Fermanagh County Councils were £7,409 against £7,028. Total net income was £202 compared with £173, which is absorbed by interest charges.

**Bengal Dooars Railway Co. Ltd.**

The directors recommend an interim dividend of 3 per cent. (same). The approximate net earnings for the six months to September 30, 1939, after allowing for Indian taxation, were £19,805, which, with £57,332 brought forward, and £943 for interest, less £59 for loss on exchange, makes a total of £78,021. From this must be deducted £7,200 for six months' dividend on the preference stock, leaving an available balance of £70,821. The interim dividend will absorb £12,000, leaving £58,821 to be carried forward.

**Southport & Cheshire Lines Extension Railway Company.**

The directors state that no basis has yet been agreed with the Government for the wartime control of the company, but payment has been received in respect

of the period to December 31, 1939. The proportion of the receipts of the undertaking, subject to adjustment, was £8,153 and the balance carried to net revenue account is £7,499, compared with £7,412 for 1938. The amount brought in is £2,057 and debenture interest absorbs £6,000. Interest of 2½ per cent. is paid on the 2½ per cent. preference stock and the balance of £2,100 is carried forward.

**Bolivia Railway Company.**

Net earnings for the half-year ended December 31, 1939, were sufficient to pay interest of 0.632 per cent. on the 5 per cent. mortgage and collateral trust income bonds. The balance to enable 1½ per cent. to be paid has been provided by the Antofagasta (Chili) & Bolivia Railway Company.

**Coventry Machine Tool Works Limited.**

The directors recommend a dividend of 6 per cent., against 5 per cent.

**Leyland & Birmingham Rubber Co. Ltd.**

The directors recommend an interim dividend on the ordinary shares of 2½ per cent.

**British Automatic Co. Ltd.**

A final dividend is announced of 4½ per cent., tax free, for the year 1939. This compares with 4 per cent., tax free, for 1938.

**Hoffmann Manufacturing Co. Ltd.**

The directors report a net profit of £250,760 for the year 1939 (against £221,141 for 1938) and recommend a final ordinary dividend of 10 per cent. tax free, making 17½ per cent. for the year (same).

**Vickers Limited.**

The directors recommend a final dividend on the ordinary stock of 6 per cent. actual, less tax, making 10 per cent. for the year 1939. Net profit, after taxation, is £1,226,870, against £1,398,853 in 1938. Transfer to contingencies is £250,000 and the carry forward is £480,188 (against £321,760 in 1938).

**Associated Electrical Industries Limited.**

Gross profit for the year 1939 amounted to £1,470,265, against £1,399,499 for 1938. Deductions are made of £234,956, compared with £229,934, for depreciation, and of £758,226 (against £505,257) for taxation. The ordinary dividend is maintained at 10 per cent. and a sum of £100,000 is again allocated to dividend equalisation account. The amount brought in is £251,647, and it is proposed to carry forward £253,118. All the works of the group were occupied to their full capacity during the year.

**Thos. Firth & John Brown Limited.**

A final dividend is recommended of 11½ per cent., free of tax, making 17½ per cent., free of tax, on the ordinary shares for the year 1939, the same as for 1938. Net profits, after charging directors' fees, debenture in-

terest, and depreciation and providing for taxation and contingencies, amounted to £508,459, compared with £515,056 for 1938.

**Sir Wm. Arrol & Co. Ltd.**

The directors report a net profit of £78,538 for 1939, against £95,494 in 1938. It is proposed to maintain the distribution on the ordinary shares at 25 per cent., to transfer £30,000 (against £50,000) to reserve, and to carry forward £41,055, against £29,121 brought in. The works were fully employed during the year, and prospects for the current year are considered to be favourable.

**British Insulated Cables Limited.**

After allowing for taxation the profit for the year 1939 amounted to £783,224, a decrease of £24,650. Net earnings, after providing for depreciation and debenture interest, were £572,581, against £597,066. The dividend distribution on the ordinary for the year is again 20 per cent. A sum of £100,000 is put to a war contingencies reserve, and general reserve gets £13,334, leaving £488,305 to be carried forward, against £486,558 brought in.

**John Baker & Bessemer Limited.**

Including adjustment for 1938 the profit for 1939 after providing for all charges, including tax and depreciation, is £65,824, compared with £49,087 for 1938. Provision for income tax payable in January, 1941, N.D.C., and E.P.T. absorbs £25,409, and A.R.P. capital expenditure £2,810. The unchanged dividend of 10 per cent. on the ordinary shares has already been announced. A sum of £20,000 is to be placed to reserve, and the carry forward is to be £22,381, against £31,061 brought in.

**Clayton Dewandre Co. Ltd.**

Profit for the year 1939 was £63,599, against £41,481 for 1938. After providing £29,314 (against £14,500) for taxation the directors recommend a final dividend of 6½ per cent. (compared with 5 per cent.), making 10 per cent. for the year 1939, compared with 8 per cent. for 1938. A transfer of £5,000 is made to general reserve, and £8,000 is added to undivided profits account. The sum carried forward is £8,381, against £4,841 brought in.

**British Thomson-Houston Co. Ltd.**

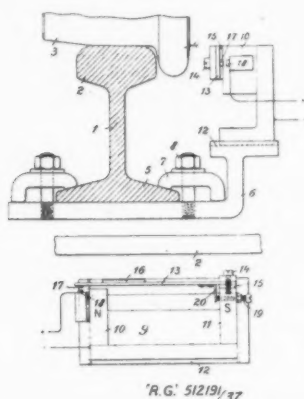
For 1939 the profit after providing for expenses was £1,038,046, compared with £970,644 for 1938. Deducting £72,480, against £89,657, for debenture interest, £287,087, against £226,941, for depreciation, and £410,000, against £300,000, for taxation, leaves a net balance of £268,479, compared with £354,046. General reserve gets £100,000, against £200,000, and the final dividend recommended on the ordinary shares is 7 per cent. (the same), leaving £192,058 to be carried forward, against £182,829 brought in. The volume of orders received and the output from the works were both greater than for the previous year, and the value of unexecuted orders on hand at the end of the year was greater than at the end of the previous year.

## ABSTRACTS OF RECENT PATENTS\*

## No. 512,191. Axle-counting

Otto Block, of Köpenickerstrasse 30a, Berlin 50.16, Germany, and Julius Bing, of Bundesratsufer 1, Berlin, N.W.21, Germany. (Convention date: July 23, 1937.)

A device which may be used for counting the axles of a train passing a block length of rail so as to be sure that all the trucks pass the controlled length of rail, consists of a magnet 9 with pole pieces 10, 11, so that, on passage of a wheel 3 on the head 2 of



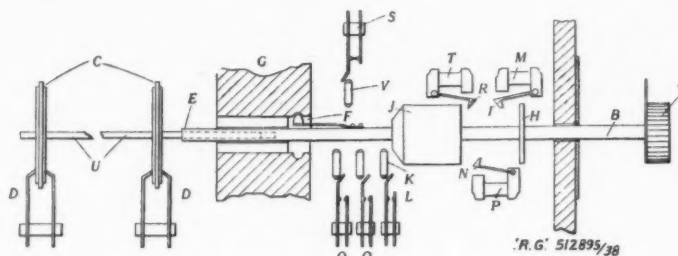
a rail 1, a magnetic flux diversion occurs, the magnet 9 thus exerting an increased magnetic pull on a magnetic armature 16 mounted on a spring 13 secured to the pole 11 by a screw 14. In this way the plates 17, 18 are contacted to complete an electric circuit which operates a counting device. A non-magnetic plate 15 may be inserted between spring 13 and pole 11. The complete device may be mounted to be displaced in a slide 11 having a clip 6 held on to the foot 5 of the rail 1 by stirrups 7 and bolts 8. By means of a screw 19 acting on an angle-bar 20 fine adjustment of the spring 13 may be effected. Several improvements are described.—(Accepted August 30, 1939.)

## No. 512,895. Signal and Points Control

Standard Telephones and Cables Limited, John Balmain Griffiths, and Andrew Brown, all of Connaught House, 63, Aldwych, London, W.C.2. (Application date: March 15, 1938.)

When the control knob A on shaft B is plunged towards the control panel a disc H on the shaft engages a detent I, the spring stud F engages one of a number of channels in the fixed member G, and the collar J depresses plunger K to close contacts L, thus preparing a circuit for the magnet M

via cam contacts D. If no conflicting route has been set or is being set this circuit is completed and the detent I is lifted by the magnet M so that the knob A may be plunged still further until the disc H engages another detent N. In a similar manner by closing contacts O the detent N is released by a magnet P, if all points in the desired route have been correctly set, so that



the knob A may be plunged to its full extent thus closing contacts Q to provide a circuit to clear the signal for the route which has been set up. Simultaneously contacts S are opened by a plunger V. On withdrawing the knob A contacts Q are opened returning the signal to "STOP," and contacts S are closed to energise the magnet T, when conditions are safe, to release the detent R to permit the knob A to be fully withdrawn, leaving all points free. The route setting position is determined by the angular disposition of the knob A fixed by the

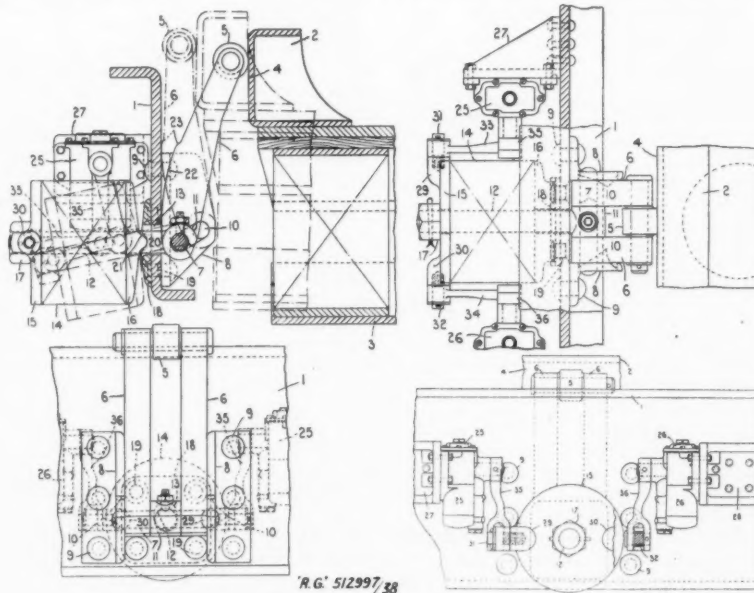
stud F, the shaft U carrying cams C receiving the rotational movement of the shaft B but not the axial movement, being mounted in the hollow end E of this shaft.—(Accepted September 28, 1939.)

## No. 512,997. Bogies

George Spencer, Moulton & Co. Ltd., and Richard Thomson Glascoine, all of 2, Central Buildings, Westminster, London, S.W.1. (Application dates: March 28 and December 20, 1938.)

A roller 5, carried by two rocking

levers 6 on a gudgeon pin 7, bears on the side wall 4 of a bogie having main side members 1 and bolster 2 carried by a spring plank 3 which is suspended by links in the usual way. Two cheek plates 8, secured by bolts 9, are slotted at 10. The gudgeon pin 7 mounts the head 11 of a draw rod 12 which projects through an aperture 13 in the frame 1 and carries a rubber spring 14. Follower plates 15, 16 are mounted on the draw rod 12, the plate 15 abutting against a nut 17 and the plate 16 bearing on a pad 18 secured by bolts 19 and recessed at 20 to



receive projections 21 to locate plate 16. The levers 6 have cam surfaces 22 which ride on the inner wall of the frame 1. Should relative movement between bolster 2 and frame 1 be

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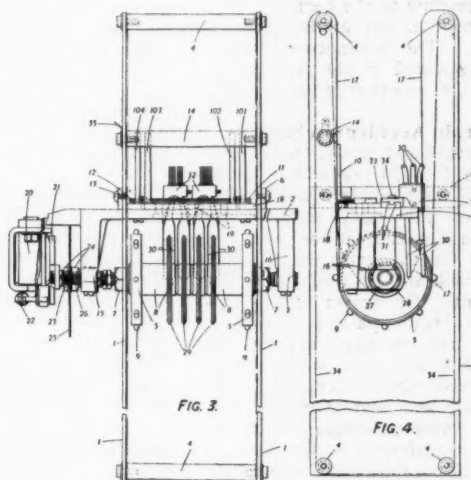
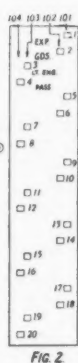
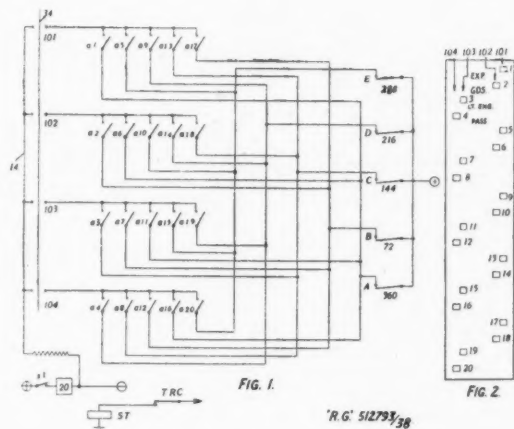
considerable the fulcrum of the levers 6 rises, thus reducing the mechanical advantage of the levers until, at the termination 23 of the surface 22, this advantage is about 1 to 1. The dash-pots 25, 26 having their axes outside the main cill are carried by brackets 27, 28, and for actuating these the follower 15 of the spring 14 has lugs 29, 30 with wrist pins 31, 32 connected by links 33, 34 to operating arms 35, 36.—(Accepted October 2, 1939.)

#### No. 512,793. Indicators

Standard Telephones and Cables Limited, Ernest John Tervet and Henry Thomas James Walsh, all of Connaught House, 63, Aldwych, London, W.C.2. (Application date: March 15, 1938.)

Fig. 1 shows a circuit for controlling a band indicator of a train describer or arrival and departure indicator, Fig. 2 shows the circuits controlled by the band indicator, and Figs. 3 and 4

surface of the hangars 15, 16 and in springs 28. Sequence switch cams 29 and sprocket wheels 5, spaced by collars 8, are mounted on the shaft 3, the assembly being fixed by nuts 7. These cams 29 consist of insulating discs on each side of which is a metal plate co-operating with wipers 30. Guide rails 31 carry wiper assemblies 32 each comprising wipers 30 and insulating plates mounted on an L-shaped bracket, an extension 33 of which is shaped to engage the rails 31 and is fixed in any position along the rails by a screw 34. Between insulating strips 12, 13, horizontal portions of band wipers 101-104 are positioned by means of a metal plate 11. Guide cylinders 4 for the indicator band are mounted between the frame members 1, and another guide 14, insulated from the frame and provided with a terminal 35, co-operate with the wipers 101-104. The endless indicator band passes outside the guides 4, between



are front and side elevations respectively of a band indicator. This band indicator consists of two side-frames 1 cut-away at 17 to carry side plates 6 and a horizontal member 18, a frame 2 carrying bearing hangars 15, 16 and a clutch magnet 20 the armature 21 of which is pivoted at its rear end, and a screw member 23 normally pressing a flexible gear wheel 25, under the action of a spring 22, against an adjustable braking member 26. The gear wheel 25 is normally warped out of engagement with another gear wheel on a drive shaft, and is fixed by nuts 24 on a screwed shaft 3 in bearings 27 mounted between recesses in the under-

the guide 14 and wipers 101-104, and underneath sprocket wheels 5, the sprockets 9 of which engage driving holes in the band. A group of relays A1-A20 control the contacts a1-a20. Suppose the band indicator is in position 3 with relay A3 operated and magnet 20 short-circuited via guide 14, wiper 103, contact a3 and cam wiper C. If relay A16 is operated and relay A3 released due to passage of a train, magnet 20 is no longer short-circuited and track contacts TRC are closed to operate relay ST to complete the magnet circuit to effect a change of indication. Modifications are described.—(Accepted September 26, 1939.)

#### COMPLETE SPECIFICATIONS ACCEPTED

- 511,893. Henschel & Sohn Ges. "Mounting of boilers of mallet locomotives."  
511,944. Shoesmith, H. W. "Truck for lifting and carrying heavy articles."  
511,981. Cox, R. W. "Window opening and closing mechanisms."  
512,133. Krupp A.-G., F. Railway for use in road-making.  
512,191. Block, O., and Bing, J. Wheel-operated contact devices for railway axle-counting apparatus.  
512,259. Sandison, A. G. S., Lawrence, A. L., and Electrical Improvements Limited. Water-level indicators for boilers and the like.  
512,532. Flinn, H. V. Track vehicles.  
512,591. Beer, M. Means for loading wagons, skips, and the like from hoppers.  
512,615. Marine & Locomotive Super-Heaters Limited, and Melhuish, H. Steam superheaters for marine and other return smoke-tube or return-flue boilers.  
512,645. Newton, N. B. Hydraulic shock-absorbers.

- 512,724. Partridge, Wilson & Co. Ltd., and Sawyer, F. G. Electric motor controllers in electrically-propelled vehicles.  
512,727. Newton, N. B. Hydraulic shock-absorbers for vehicles.  
512,784. Alexander, G. W., and Metropolitan-Vickers Electrical Co. Ltd. Control gear for electric motors.  
512,793. Standard Telephones & Cables Limited, Tervet, E. J., and Walsh, H. T. J. Railway indicators.  
512,843. Baker, W. S. G., and London Passenger Transport Board. Axle-box for railway and like vehicles.  
512,890. Fitzgerald, G. P. Valves for steam engines.  
513,241. British Boiler Accessories Limited, and Goldstern, W. Steam accumulators.

NORTHERN IRELAND TRAFFICS.—Total passenger receipts on railways wholly in Northern Ireland during the year 1939 were £316,566, an improvement of £31,657 on the year 1938, although the number of passengers (excluding season ticket holders) fell from 5,781,813 to 5,686,523. Merchandise and minerals

conveyed in 1939 were 570,337 tons, an increase of 81,311 tons; the number of livestock rose from 231,680 to 232,940; and the total goods traffic receipts from £184,442 to £212,969. On railways partly in Northern Ireland, the ordinary passengers in 1939 numbered 5,628,084, against 5,579,025 in 1938, and the total

passenger receipts of £481,684 were £8,388 higher. Merchandise and mineral tons increased in 1939 from 948,368 to 1,160,947, and the number of livestock from 743,790 to 768,062. Total receipts from goods traffic during the year 1939 were £722,831, compared with £610,486 in 1938.



## NOTES AND NEWS

**Railway Accident in Yugoslavia.**—As a train was travelling between Zaluka and Ozalj on the line between Karlovacz and Ljubljana on March 17, it was derailed by a landslip, and 20 persons are reported to have lost their lives.

**Franco-Spanish Frontier Communications.**—The Canfranc line, which provides rail communication between Pau and Zaragoza, was reopened on March 16. The resumption of traffic on this line completes the restoration of frontier communication, interrupted by the civil war, at all points between France and Spain.

**Spanish Train Runs into Sea.**—A curious accident occurred at Villagarcia on March 8, when a goods train, proceeding from Santiago to Pontevedra, was turned by mistake into a branch line leading to the harbour, and, failing to stop on the grade, plunged into the sea. The locomotive and six wagons disappeared in the water, but the only life lost was that of the fireman.

**Goods Train Accident in Scotland.**—As a southbound goods train was climbing the 1 in 70 gradient between Inverkeithing and North Queensferry, L.N.E.R., in the early morning of March 19, a coupling broke and the rear wagons together with the banking engine ran back and became derailed at a catch point. The driver of a northbound goods train passing the spot, and seeing the mishap, applied his brakes suddenly and some of the wagons in his train also became derailed. Both lines were blocked, but there were no casualties. Some passengers travelling south were transferred to the steamer at Burntisland for Granton. As recorded on page 471 this was the last day on which the ferry worked.

**G.W.R. Ambulance Presentation at Gloucester.**—The annual presentation of awards to members of the Gloucester Ambulance Corps was held at the Spread Eagle Hotel, Gloucester,

on March 9, and took the form of a smoking concert, in place of the usual dinner which was abandoned owing to the war. Mr. S. G. Hearn, Divisional Superintendent, presided, and was supported by the City Member, Mr. H. Leslie Boyce, Mr. L. J. A. Callaway, District Goods Manager, Mr. T. C. B. Davies, Divisional Engineer, Mr. H. C. Claridge, Signal Engineer, and other officials of the company. Acknowledging his re-election as President of the Gloucester Combined Ambulance Corps, Mr. Hearn made a strong appeal for further recruits to the movement. Over the whole Great Western Railway system the number of recruits had been more than doubled during the previous year, being 1,605, compared with 795. The knowledge of first aid was more than ever desirable now that the country was at war, not only in view of the importance of troops and war material that had to be carried, but because qualified first aid units formed the nucleus of all A.R.P. schemes. Mr. W. C. Drinkwater, the Honorary Secretary of the Corps, was elected by his fellow members to receive the S. Morris Cup, awarded to the member who had done most to further the movement.

**Reconstruction of Sloane Square Station.**—The first stage of the reconstruction of Sloane Square underground station was completed on Wednesday, March 27, when escalators from the platforms to the street and a new ticket hall were opened to the public. These are the first escalators to be built by London Transport in an open station. They are 50 ft. long and rise 25 ft. sparing passengers the old climb of 52 steps. There was no room to build descending escalators, but new steps have been built in easy stages. Sloane Square, which is used by some 150,000 passengers a week, is one of the oldest and best known stations on the railways of the London Passenger Transport Board. It was opened on December 24, 1868, and remained in its original condition until the present reconstruction was begun. The new station will be finished

at the end of July. London Transport now has 160 escalators, the greatest number owned by any one undertaking in the world. Stationmaster Arthur Hoyle, who has been at Sloane Square since 1911, started the escalators by cutting a tape. His service of 29 years at one station is a record in London Transport. The first escalators in London began service at Earl's Court in 1911.

## British and Irish Railway Stocks and Shares

Stocks	Highest 1939	Lowest 1939	Prices	
			Mar. 26, 1940	Rise/ Fall
G.W.R.				
Cons. Ord. ....	38	21½	47½	-1½
5% Con. Pref. ....	92	71	99½	-2
5% Red. Pref. (1950) ..	98	83	101½	—
4% Deb. ....	103	91	103½	—
4½% Deb. ....	105½	93½	107½	—
4½% Deb. ....	110	99	111	—
5% Deb. ....	121	109½	122½	—
2½% Deb. ....	63½	54	65½	—
5% Rt. Charge ....	117	104	116	—
5% Cons. Guar. ....	111	96½	114	—
L.M.S.R.				
Ord. ....	17	9½	22	-½
4% Pref. (1923) ....	46½	20	52½	-3
4% Pref. ....	63½	37½	63½	-3
5% Red. Pref. (1955) ..	83	58½	90	—
4% Deb. ....	98½	85	98½	—
5% Red. Deb. (1952) ...	109	101½	107	—
4% Guar. ....	87½	73	89½	-2
L.N.E.R.				
5% Pref. Ord. ....	5½	3½	6½	-½
Def. Ord. ....	3½	1½	3½	-½
4% First Pref. ....	38½	19	51½	-3
4% Second Pref. ....	15	7½	20	-½
5% Red. Pref. (1955) ..	55	38	72½	-3
4% First Guar. ....	78½	60	80½	-2
4% Second Guar. ....	68½	47	73½	—
3% Deb. ....	71½	57	71½	-1
4% Deb. ....	93	76	94½	-1
5% Red. Deb. (1947) ...	106½	98	103½*	-2
4% Sinking Fund Red. Deb. ....	104½	96	102½	—
SOUTHERN				
Pref. Ord. ....	78	46½	70	-3
Def. Ord. ....	19½	7	21½	-½
5% Pref. ....	100	76	99½	-3
5% Red. Pref. (1964) ...	102½	94	102½	+2
5% Guar. Pref. ....	116½	103	114	—
5% Red. Guar. Pref. (1957) ..	112½	102½	111	—
4% Deb. ....	103	91½	101½	—
5% Deb. ....	118½	109½	122½	—
4% Red. Deb. (1962-67) ..	106	98	104½	—
4% Red. Deb. (1970-80) ...	102	96	103½	-1
FORTH BRIDGE				
4% Deb. ....	98½	81	90½	—
4% Guar. ....	95	80	90½	—
L.P.T.B.				
4½% "A" ....	115	103	109½	-2
5% "A" ....	123	106½	117½	-1
4½% "T.F.A." ..	105	100½	104	—
5% "B" ....	117½	102	108½	—
"C" ....	84	63½	43½	-1
MERSEY				
Ord. ....	24½	17½	25½	+1
4% Perp. Deb. ....	93½	88½	91	+½
3% Perp. Deb. ....	77	65½	65½	+1
3% Perp. Pref. ....	55	49½	54½	—
IRELAND				
BELFAST & C.D.				
Ord. ....	6	3	4	—
G. NORTHERN				
Ord. ....	6	2½	4½	—
G. SOUTHERN				
Ord. ....	13½	8	11	—
Pref. ....	26	10	22	—
Guar. ....	40½	22	33½	+½
Deb. ....	57	45½	53	—

\* ex dividend

## Irish Traffic Returns

IRELAND	Totals for 11th Week			Totals to Date		
	1940	1939	Inc. or Dec.	1940	1939	Inc. or Dec.
	£	£	£	£	£	£
Belfast & C.D. (80 miles)	pass. 1,997 goods 454 total 2,451	1,674 475 2,149	+ 323 - 21 + 302	21,781 5,308 27,089	17,886 4,617 22,503	+ 3,895 + 691 + 4,586
Great Northern (543 miles)	pass. 9,050 goods 12,750 total 21,800	11,100 10,500 21,600	- 2,050 + 2,250 + 200	98,600 123,700 222,300	93,500 108,700 202,200	+ 5,100 + 15,000 + 20,100
Great Southern (2,076 miles)	pass. 29,113 goods 47,582 total 76,695	31,214 38,593 69,807	- 2,101 + 8,989 + 6,888	308,516 468,809 777,325	308,433 446,955 755,388	+ 83 + 21,854 + 21,937
L.M.S.R. (N.C.C.) (271 miles)	pass. 4,230 goods 3,880 total 8,110	3,210 3,130 6,340	+ 1,020 + 750 + 1,770	41,490 36,460 77,950	33,140 30,300 63,440	+ 8,350 + 6,160 + 14,510

## OFFICIAL NOTICES

## Crown Agents for the Colonies

## COLONIAL GOVERNMENT APPOINTMENTS.

Applications from qualified candidates are invited for the following post :—

ASSISTANT MECHANICAL ENGINEER required for the Tanganyika Government Railway for one tour of from 20—30 months with possible permanency. Salary £480, rising to £720 a year. Free quarters and

passages and liberal leave on full salary. Candidates age 25—30, must hold a University Engineering degree or be Associate Members of the Institution of Mechanical Engineers. They should have served an apprenticeship in the Locomotive Department of a British Railway or with a firm of locomotive builders and have had running experience.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M/9193.

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## CONTRACTS AND TENDERS

It is reported that orders for rolling stock valued at 625 million fr. have been distributed among 13 French manufacturers. The orders are said to include 5,000 open wagons, 2,000 hopper wagons and 1,500 covered wagons.

The South Indian Railway has placed the following orders to the inspection of Messrs. Robert White & Partners :—

Guest, Keen & Nettelfolds Limited : 5 tons of screw and dog spikes.

J. Stone & Co. Ltd. : 3 motor-driven pumps for water raising.

Steel, Peech & Tozer has received an order from the Bengal-Nagpur Railway for 96 loco. straight axles.

The Egyptian State Railways have placed the following orders :—

Patent Shaft & Axletree Co. Ltd. : Axles (No. 21-1092, £411).

General Electric Co. Ltd. : Transformers (No. 39.50, £515).

The following orders have been placed to the inspection of Messrs. Rendel, Palmer & Tritton :—

Bengal & North Western Railway :

Vulcan Foundry Limited : 123 loco. cranks.

North British Locomotive Co. Ltd. : 46 crossheads.

Monk Bridge Iron & Steel Co. Ltd. : 162 loco. axles.

Smith & McLean Limited : 900 panel plates.

A.B.C. Coupler & Engineering Co. Ltd. : 578 buffers.

B.B.C.I.R. :

Linley & Co. Ltd. : 48 copper firebox plates.

The S.A. des Ateliers de Sécheron, of Geneva, has received an order from the Bern-Lötschberg-Simplon Railway for a third 6,000 h.p. electric locomotive of the type described in our *Electric Traction Supplement* of December 8, 1939. As with the two existing locomotives, the mechanical portion will be built by the Swiss Locomotive & Machine Works.

A concession for working the lignite deposits in the Florina-Kozani district in Greece recently granted by the Greek Government to American interests, stipulates the construction of a 22-mile 60-cm. gauge railway to connect with the State Railways at Amyntaion.

The Iranian State Railways are understood to be enquiring for 12 to 24 steam locomotives of the 2-8-2 or 2-10-2 type.

The South African Railways are calling for tenders by May 6 for structural steelwork to be used at one of the sheds at Buffalo Harbour. Tender No. 2556 ; D.O.T. No. T. 17388/40.

The Egyptian State Railways are enquiring for the following items :—

560 outer and 225 inner helical steel springs (E.S.R. 21.1169).

250 solid drawn steel boiler tubes (E.S.R. 17.300).

The Indian Stores Department invites tenders for the following equipment :—

50-ton lifting and traversing jacks and 30-ton hydro-pneumatic pit jacks for the E.I.R. (No. W. 342 : April 22).

Helical steel springs for bearings, bolsters, bogies, drawbars and buffers to a total of over 11,000, for the G.I.P.R. and E.I.R. (No. N-1035/4 : April 10).

1,240 screw couplings, 750 shackle hooks, and 125 drawbar hooks, for the G.I.P.R. (No. N-1035/2 : April 10).

Buffer cases and parts to a total of over 6,000 items, for the G.I.P.R. and E.I.R. (No. N-1035/3 : April 10).

2,270 cast steel axleboxes and 160 drawhook rubbing blocks for the G.I.P.R. and E.I.R. (No. N-1035/1 : April 10).

Carbon brushes for generators, motors and switchgear, for the G.I.P.R. and E.I.R. (No. E-5281 : April 16).

39,120 yd. of imitation leather cloth and details (No. X-3/6399 : April 10).

11,550 yd. of linoleum 9 ft. wide by 3.5 mm. thick for the N.W.R. and G.I.P.R. (brown) and E.I.R. and E.B.R. (green). (No. X-3/6400 : April 16).

Composition flooring for railway carriages (No. 3-294 : April 1).

Wire ropes (No. N-1010/1 : April 1).

Gauge column and lubricator glasses (No. M-5797 : April 8).

The Stores Purchase Committee of the Mysore State Railways is in the market for locomotive, carriage, and wagon spares ; tenders to be in at Bangalore by May 6. Particulars from Messrs. Rendel, Palmer & Tritton.

## DISTRIBUTION OF STEEL SUPPLIES

To ensure an equitable distribution of such steel supplies as are available from time to time, and to avoid delays in deliveries of materials, the Ministry of Supply has instituted a new scheme of distribution among all the consuming interests, which will be brought into force by administrative Order on April 1. The steel supplies covered by the scheme comprise practically all products in the finished form as ordered by customers from the producers, in so far as they are not acquired for conversion into any of the other classes of finished steel listed.

For the purposes of the scheme all the consuming interests have been grouped under Government Departments which, in conjunction with the Iron & Steel Control, will be responsible for the

supplies of finished steel to the services covered by the "Departments." For the purposes of identification each has been given a symbol. To ensure, as far as possible, deliveries of finished steel within the periods required by the consuming interests, orders for finished steel placed with finished steel producers must bear the following period numbers with tonnages for each period :—

Period I.—January 1 to March 31.

Period II.—April 1 to June 30.

Period III.—July 1 to September 30.

Period IV.—October 1 to December 31.

Broadly, the distribution scheme is divided into two main parts, namely, contracts placed by or for Government Departments and contracts not placed by or for "Departments." Railway supplies come in the second category. Allocations of finished steel will be made by "Departments" to supply the services in respect of which contracts are not placed by "Departments," and these services are listed under such "Department" as a guide to obtaining the necessary authority for the finished steel to fulfil such contracts. The following example deals with services covered by the Ministry of Transport :—

Railways (including all wagons used on railways), ports, canals, highways, tramways, works and buildings for Ministry undertakings.

(a) Allocations either direct or as a result of an application will be made by the Ministry of Transport.

(b)—(1) In the case of the railways, finished steel required for stores and loose tools will come under the allocation made. Finished steel for fittings, etc., will be covered by the Board of Trade—Home Civil requirements by means of (a) licence direct by Iron & Steel Control in the case of finished steel, or (b) in the case of manufactured articles by licence by Iron & Steel Control for the finished steel required to the manufacturer thereof from whom they may be bought without special authority.

(2) In the case of the other consuming interests the finished steel for stores, loose tools, fittings, etc., will be covered by the Board of Trade—Home Civil Requirements.

(c) The symbol of the "Department," reference number and period numbers with tonnages for each period authorised by the "Department" will be quoted to finished steel producers by main contractors and sub-contractors.

(d) No licence from the Iron & Steel Control will be required.

Regulations as to the free import of railway and other material as given in the Import Duties (Exemptions) (No. 1) Order, 1940, will be found on p. 470.

## Railway Stock Market

Although very little improvement in the volume of business was reported, general conditions in the stock and share markets became firmer following the Easter holidays. It is realised that sentiment is likely to continue to be influenced by the tendency in Government securities, but it is possible there may be little change in the general trend in view of the widespread disposition to await the Budget. Home railway securities provided the most active market feature on indications of excellent traffics during the Easter period, and expectations that railway charges will shortly be increased to meet the higher cost of materials and operation. Junior stocks have attracted attention on the encouraging views already current in the market as to interim dividends, and there was also a firmer tendency in debentures and senior preference stocks in sympathy with Government securities. Moreover, various stocks, including L.N.E.R. guaranteed, were in better request in view of the generous yields shown at current prices.

Great Western ordinary changed hands actively around 48, and the 5 per cent. preference stock had a firmer appearance at around par; the 4 per cent. debentures

were quoted at 103½. Whereas Southern deferred was in demand up to 21½, the preferred was relatively dull at 70, although the yield on the latter would seem generous, bearing in mind that this stock can be regarded as assured of its full 5 per cent. dividend throughout the war period. Southern 5 per cent. preference made the slightly better price of 100½; the 4 per cent. debentures were fractionally higher at 102, and the 5 per cent. guaranteed had a "middle" price of 114½. L.M.S.R. ordinary participated in the better tendency and transferred at slightly over 22½; the 1923 preference was 52½, and the senior preference higher at 64½. The 4 per cent. guaranteed was firmer at 90. As to debentures, the 5 per cents remained at 107 and the 4 per cents at 98. The latter would seem to be undervalued in relation to Southern and Great Western 4 per cent. debentures. Among L.N.E.R. stocks, the first guaranteed was firmer at 80, as was the second guaranteed at 73. The first preference rallied and subsequently improved to 51½, and the second preference was 20, L.N.E.R. 3 per cent. debentures were 71½, and the 4 per cent. debentures 95. London Transport "C" remained out of

favour and was around 43½, with the 5 per cent. "B" quoted at 108½ and the 5 per cent. "A" stock at 117½. Although the question of liability of the railways in regard to E.P.T. is not clearly defined, if earnings of 6 per cent. on capital is taken as the basis, the dividend outlook of the junior stocks will not be affected to any appreciable extent, and on present indications, market expectations of improved dividends for the current year appear soundly based.

Foreign railway securities were out of favour, but San Paulo was unchanged at 40, and Nitrate Rails ordinary continued to attract some attention on improved dividend prospects and the possibility of a distribution out of surplus assets. Debenture stocks of leading Argentine railway companies were reactionary, although in most instances they do not appear over-valued at current levels. The majority of the preference stocks, and the ordinary stocks, are classed mainly as long term holdings on the possibility that results of the Argentine railways may show good improvement in the financial year commencing July 1 next. Canadian Pacific ordinary were 8½ and the preference stock 41½.

### Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1939-40	Week Ending	Traffic for Week		No. of Weeks	Aggregate Traffic to Date			Shares or Stock	Prices			
			Total this year	Inc. or Dec. compared with 1939		Totals		Increase or Decrease		Highest 1939	Lowest 1939	Mar. 26, 1940	Yield " " (See Note)
						This Year	Last Year						
South & Central America													
Antofagasta (Chili) & Bolivia	834	17.3.40	£ 21,260	+ £ 1,610	11	£ 207,150	£ 150,200	+ £ 56,950	Ord. Stk.	10½	4½	9½	Nil
Argentine North Eastern	753	16.3.40	ps. 137,500	+ ps. 1,200	38	ps. 5,660,500	ps. 5,840,800	+ ps. 180,300	"	4½	2½	3½	Nil
Bolivar	174	Feb. 1940	3,520	180	8	7,220	7,100	+ 120	6 p.c. Deb.	7½	5½	7½	Nil
Brazil									Bonds	5½	4½	6½	7½
Buenos Ayres & Pacific	2,801	16.3.40	ps. 1,780,000	+ ps. 75,000	38	ps. 50,471,000	ps. 51,467,000	+ ps. 996,000	Ord. Stk.	5½	2½	4	Nil
Buenos Aires Central	190	10.2.40	\$71,800	+ \$8,900	33	\$3,329,800	\$3,537,200	+ \$207,400	Mt. Deb.	14	8	13½	Nil
Buenos Ayres Gr. Southern	5,082	16.3.40	ps. 3,042,000	+ ps. 265,000	38	ps. 88,014,000	ps. 86,766,000	+ ps. 1,248,000	Ord. Stk.	13½	4½	8½	Nil
Buenos Ayres Western	1,930	16.3.40	ps. 950,000	+ ps. 93,000	38	ps. 29,088,000	ps. 26,834,000	+ ps. 2,254,000	"	10½	4	7	Nil
Central Argentine	3,700	16.3.40	ps. 1,866,350	+ ps. 194,650	38	ps. 66,089,400	ps. 70,600,700	+ ps. 4,511,300	"	11½	4	7	Nil
Do.									Div.	4	1½	4	Nil
Cent. Uruguay of M. Video	972	16.3.40	26,195	+ 6,796	38	781,692	694,329	+ 87,363	Ord. Stk.	2½	1½	3½	Nil
Costa Rica	188	Jan. 1940	11,360	+ 5,266	31	119,201	155,492	+ 36,291	Stk.	24½	18	22	9½
Dorada	70	Feb. 1940	10,500	+ 2,300	8	22,700	26,100	+ 3,400	1 Mt. Db.	104½	102	102½	5½
Entre Rios	810	16.3.40	ps. 203,900	+ ps. 29,800	38	ps. 9,034,200	ps. 9,473,900	+ ps. 439,700	Ord. Stk.	6	3	4½	Nil
Great Western of Brazil	1,016	16.3.40	13,900	+ 3,000	11	149,300	126,700	+ 22,600	Ord. Sh.	3½	1½	7½	Nil
International of Cl. Amer.	794	Jan. 1940	\$565,491	+ \$17,218	4	\$565,491	\$548,273	+ \$17,218	"	3½	1½	7½	Nil
Interoceanic of Mexico			6,995	+ 2,340	8	14,605	9,405	+ 5,200	1st Pref.	7½	7½	7½	Nil
La Guaira & Caracas	223	Feb. 1940	23,120	+ 2,902	11	251,620	224,675	+ 26,945	Stk.	24½	18	22	9½
Leopoldina	1,918	16.3.40	\$326,800	+ \$12,200	6	\$1,953,200	\$1,943,300	+ \$9,900	Ord. Stk.	2½	1½	2½	Nil
Mexican	483	14.2.40	12,749	+ 3,448	35	80,695	73,867	+ 6,828	"	1½	1½	1½	Nil
Midland of Uruguay	319	Feb. 1940	7,419	+ 407	10	42,209	26,214	+ 15,995	Ord. Sh.	2½	1½	2½	5½
Nitrate	386	15.3.40	\$3,167,000	+ \$36,000	38	\$118,462,000	\$114,447,000	+ \$4,015,000	Pr. Li. Stk.	45½	36	38	15½
Paraguay Central	274	16.3.40	66,923	+ 5,122	35	531,913	539,567	+ 7,654	Pref.	1½	1½	1½	Nil
Peruvian Corporation	1,059	Feb. 1940	c\$4,350	+ c\$10,150	33	c\$34,567	c\$36,464	+ c\$1,897	Pr. Li. Db.	19½	16	15	Nil
Salvador	100	10.2.40	35,317	+ 6,678	10	328,517	281,400	+ 47,117	Ord. Stk.	38	20	41	4½
San Paulo	153½	10.3.40	3,660	+ 210	31	17,800	20,785	+ 2,985	Ord. Sh.	1½	6/6	1½	Nil
Tatral	160	Jan. 1940	53,415	+ 3,095	38	806,297	822,091	+ 15,794	Ord. Stk.	2	2	2	Nil
United of Havana	1,353	16.3.40	1,155	+ 378	35	8,543	8,246	+ 297	Deb. Stk.	2	2	2	Nil
Uruguay Northern	73	Feb. 1940											
Canada													
Canadian National	23,696	14.3.40	798,494	+ 158,525	10	8,682,580	6,603,853	+ 2,078,727	Perp. Dbs.	74½	60	79	5½
Canadian Northern									4 p.c.	100½	76	101½	3½
Grand Trunk									Ord. Stk.	7½	3½	8½	Nil
Canadian Pacific	17,169	21.3.40	525,000	+ 72,000	11	6,405,800	5,170,400	+ 1,235,400	"				
India													
Assam Bengal	1,329	20.2.40	43,260	+ 5,680	48	1,400,079	1,356,198	+ 43,881	Ord. Stk.	76½	60	78½	3½
Barsi Light	202	29.2.40	2,955	+ 450	49	116,610	126,990	+ 10,380	Ord. Sh.	56½	50½	45	8½
Bengal & North Western	2,096	29.2.40	86,110	+ 12,607	22	1,178,408	1,230,125	+ 51,717	Ord. Stk.	277	229½	280	5½
Bengal Dooars & Extension	161	10.2.40	2,997	+ 381	47	124,699	131,429	+ 6,730	"	91	84½	207½	3½
Bengal-Nagpur	3,267	29.2.40	244,575	+ 64,382	49	7,374,870	6,454,544	+ 920,326	"	94½	83½	93½	4½
Bombay, Baroda & Cl. India	2,986	10.3.40	293,100	+ 45,600	50	8,535,525	8,354,100	+ 181,425	"	108	90	104½	5½
Madras & Southern Mahratta	2,967	29.2.40	196,425	+ 46,361	49	5,328,790	5,153,810	+ 174,980	"	104½	92	102½	7½
Rohilkund & Kumaon	571	29.2.40	19,544	+ 6,616	22	248,482	227,809	+ 20,673	"	280	263	277	5½
South Indian	2,531½	20.2.40	112,295	+ 2,789	48	3,623,567	3,651,243	+ 27,676	"	102½	88	92½	5½
Various													
Beira	204	Dec. 1939	65,634		13	219,638							
Egyptian Delta	623	20.2.40	5,444	+ 131	48	192,875	193,899	+ 1,024	Prf. Sh.	1½	1½	1½	Nil
Kenya & Uganda	1,625	May 1939	206,557	+ 11,295	21	1,220,870	1,309,332	+ 88,462	"				
Manila									B. Deb.	55	39	47½	7½
Midland of W. Australia	277	Jan. 1940	13,729	+ 1,218	31	90,657	107,233	+ 16,576	Inc. Deb.	91½	87½	84	4½
Nigerian	1,900	20.1.40	67,453	+ 5,642	43	1,528,574	1,697,147	+ 168,573	"				
Rhodesia	2,442½	Dec. 1939	373,151		13	1,136,075							
South Africa	3,284	2.3.40	656,720	+ 399	49	31,321,200	29,937,850	+ 1,383,350	"				
Victoria	4,774	Dec., 1939	943,915	+ 84,727	26	4,838,002	4,733,741	+ 104,261	"				

Note. Yields are based on the approximate current prices and are within a fraction of ½. Argentine traffics are now given in pesos. † Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend